

NOS/VE 1.7.1 L803
SOFTWARE
RELEASE BULLETIN

This product is intended for use only as described in this document. Control Data cannot be responsible for the proper functioning of undescribed features and parameters.

Publication Number 134092

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Revision letters I, O, Q, S, X, and Z are not used.

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SRB Introduction

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The NOS/VE 1.7.1 L803 Software Release Bulletin (SRB) contains information about new features available in NOS/VE and its software products. For information regarding the applications software, refer to the software release bulletins packaged with the applications.

Organization

The Software Release Bulletin is organized alphabetically into chapters which pertain to different areas of the operating system and its products. Each chapter has appropriate information regarding:

- Feature Descriptions
- Notes and Cautions
- Incompatibilities (with the previous release)
- Significant Problems
- Manual Errata
- Future Considerations (items of significance planned for a release in the near future)

Appendix A contains support information for the operating system and product set. Appendix B contains information about the printed publications available at this release. An index follows the last appendix.

Notes and Cautions

Code that went into NOS/VE 1.7.1 L803 requires the following products match the operating system level at L803:

Archive/VE
Desktop/VE
Edit Catalog
EZView
File Manager
FTAM
NFS
NQS

Application Certification Matrix

All users with a valid login to SOLVER may list the NOS/VE application certification matrix. This matrix cross-references specific application releases with NOS/VE release levels. It also lists future releases of applications.

The Control Data Software Support manual (60494500) explains how to access SOLVER. The following steps show how to access the certification matrix:

1. The main menu appears and gives five options. Enter 2 to retrieve the Installation Bulletin.
2. A list of operating system bulletins by release level appears. Choose the appropriate NOS/VE release level.
3. A menu with four options appears. Enter 4 to obtain a list of available topics.
4. Look for the title NOS/VE Application Certification Matrix and choose the corresponding item number.
5. Enter BYE to log out.

Trademarks

The following trademarks are mentioned in this document:

- OSF/Motif, Motif, and OSF are trademarks of the Open System Foundation, Inc.
- Sun Workstation is a trademark of Sun Microsystems, Inc.
- UNIX is a registered trademark of UNIX System Laboratories, Inc.
- X Window System is a trademark of the Massachusetts Institute of Technology.

Central Software Support (CSS) Hotline

Control Data Systems maintains a hotline to assist you in using our products. This hotline service is available to you for each product you license and cover with a Control Data software support agreement.

If you need help not provided by the documentation or find that a product does not perform as described, contact the hotline through one of the following methods:

Mail

Mailing Address

Control Data Systems
ARH213/Room 1S115
4201 North Lexington Ave.
Arden Hills, MN 55126-6198

Shipping Address

Control Data Systems
Central Software Support/1S115
4233 North Lexington Ave.
Arden Hills, MN 55126-6198

Telephone

Telephone Number

800-345-6628
612-482-3434

Countries

USA and Canada (follow touchtone prompts)
Other countries

Internet

Internet Address

epix@css.cdc.com
irix@css.cdc.com
tcix@css.cdc.com
nos@css.cdc.com
nosve@css.cdc.com
networks@css.cdc.com
compilers@css.cdc.com
edl@css.cdc.com
icem@css.cdc.com
dm@css.cdc.com
vista@css.cdc.com
support@css.cdc.com
solveradm@css.cdc.com
solver@css.cdc.com
supportmgr@css.cdc.com

Support Area

EP/IX Operating System Support
IRIX Operating System Support
TC/IX Operating System Support
NOS Operating System Support
NOS/VE Operating System Support
Network Support
Compiler Support
EDL Support
ICEM Support
Data Management Support
Vista and PC Product Support
Miscellaneous
SOLVER Validations
Email interface to SOLVER
Contact a support manager

SOLVER

When you call or write the support hotline, please include the following information:

- Site Number (assigned for all hardware and software support requests)
- Operating system and level installed
- Machine type (for example, 4360-302, 910B-232)
- Product for which support is needed
- Details concerning the problem

This allows CSS to solve your problem as quickly and efficiently as possible.

SOLVER

As a Control Data support customer, you also receive a subscription to SOLVER, the online support service. SOLVER is an interactive tool with menus and help for all functions and prompts. From SOLVER, you can report problems (PSRs) to Control Data, search with keywords to find similar problem reports from other sites, status progress against a PSR including workarounds and fix availability, request software enhancements (RSEs), and write comments against the documentation. SOLVER also includes a bulletin board of post-release highlights, warnings, and product update announcements.

For help with SOLVER or SOLVER validation information, contact CSS at the telephone numbers listed above or email to solveradm@css.cdc.com.

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This chapter highlights new features in Archive/VE, incompatibilities, notes, and cautions. Archive/VE improves the efficiency and cost effectiveness of NOS/VE's mass storage by supporting a secondary level of file storage. This product is described in the NOS/VE File Archiving manual.

Feature Descriptions

Reconcile Image Management Database

This feature allows a site to identify and correct any inconsistencies between the Image Management File (IMF) database and the Cartridge Storage System (CSS) database.

If the IMF database references a file name that is unknown to CSS, the file cannot be retrieved and the associated archive image is considered to be invalid. Likewise, if the CSS contains a file that is unknown to the IMF database, the file on CSS is useless (there will never be a call to retrieve the archive image in that file).

To detect these differences, a new subcommand, `RECONCILE_CSS_DATABASE` (`RECCD`) has been added to the `MANAGE_ARCHIVE_IMAGES` utility. This subcommand compares the CSS database with the IMF database and identifies childless archive images that point to nonexistent CSS files as well as orphan CSS files that are unknown to Archive/VE. `RECONCILE_CSS_DATABASE` sets the retrieval status to abnormal for each missing archive image so Archive/VE does not attempt to retrieve the missing archive image. Upon completion of this command, `RECONCILE_CSS_DATABASE` writes a report that lists all unreconciled file names, missing archive images, and unreconciled CSS files.

To support reconciliation, the CSS utility `MANAGE_CARTRIDGE_SYSTEM` has a new subcommand, `AUDIT_DATABASE` (`AUDD`). Using this subcommand, the CSS database is scanned to detect duplicate files and missing file segments. The output from `AUDIT_DATABASE` is a file containing a list of `DELETE_CARTRIDGE_FILE` commands; there is one entry for each CSS file name that is to be deleted. Use the `INCLUDE_FILE` command to execute this file. The `AUDIT_DATABASE` subcommand also generates an output file listing the total number of files, number of duplicate files, the number of incomplete files, and the CSS file names that are to be deleted.

Simultaneous Copies

This feature allows an Archive/VE concurrent magnetic tape processor to create multiple copies of an archive file. Each copy contains the same set of permanent file archive images created during one archive session. Up to five copies can be created in this manner.

When multiple copies are made, each copy is interchangeable with any other copy. However, individual volumes within each copy are not interchangeable. All copies must have the same physical device class and all tape volumes have the same label type (labeled or unlabeled).

This feature uses multiple file connections for the archive file. It writes an archive image of a permanent file cycle to each copy of the archive file before processing the next archive image. Each archive file copy requires one tape unit so the magnetic tape

processor reserves all tape units simultaneously. The magnetic tape processor sends a message to the operator if it cannot reserve the required number of tape units. This message indicates the required number of units and retry options. If an unrecoverable error occurs while writing an archive volume, Archive/VE discards all archive copies in progress.

To produce one or more copies of the archive file simultaneously, the `ADDITIONAL_COPY_PROCESSOR` parameter has been added to the `ARCHIVE_ALL_FILES`, `ARCHIVE_CATALOG`, and `ARCHIVE_FILE` subcommands of the `ARCHIVE_PERMANENT_FILES` utility. The `ADDITIONAL_COPY_PROCESSOR` parameter is a list of up to four processors that receive archive file copies generated simultaneously by the archive processor. The archive processor class must be `TAPE` to specify the list.

A site can specify that any of the simultaneous copies of an archive file being produced by a particular magnetic tape processor be associated with another magnetic tape processor that uses the same physical device class. For example, three copies being produced by magnetic tape processor `CONSOLE_TAPES` could be assigned to magnetic tape processors `CONSOLE_TAPES`, `VAULT_TAPES`, and `OFF_SITE_TAPES` in the permanent file catalog for file retrieval purposes.

Tape volumes for the archive file copies are requested for mounting in the order of the processors specified by the `PROCESSOR` and `ADDITIONAL_COPY_PROCESSOR` parameters. The archive processor uses the primary copy and the additional processors have the alternate copies. File retrieval is in the same order of the list of processors. A site can use the `CHANGE_RETRIEVAL_PRECEDENCE` subcommand of the `MANAGE_ARCHIVE_ACTIVITY` utility to change the retrieval precedence for the processors.

MANAGE_ARCHIVE_IMAGES Utility

The `CONSOLIDATE_ARCHIVE_IMAGES` subcommand of the `MANAGE_ARCHIVE_IMAGES` utility now includes the `ADDITIONAL_COPY_PROCESSOR` parameter. This parameter contains a list of magnetic tape processors using the same physical device class as the consolidation processor. After a set of permanent file cycles is selected and retrieved by the consolidation processor, an archive image for each file cycle is deleted for the consolidation processor and for each of the processors in the list. File cycles are then rearchived for the consolidation processor with simultaneous archive copies generated for the processors in this list.

Intercept Procedures

The released intercept procedures for requesting and detaching an archive file for a magnetic tape processor now accommodates multiple file connections and site information from the archive request. The procedures for detaching an archive file, requesting a file for retrieval, and declaring an archive file available now accepts a tape volume set of up to 100 volumes. The previous limit was 25 volumes.

This feature applies only to the concurrent version of the magnetic tape processor introduced at NOS/VE 1.6.1 L780. There is no change to previous versions of the magnetic tape processor, the Cartridge Storage System processor, or the NOS processor.

Notes and Cautions

Intercept Procedures

The released tape intercept procedures for magnetic tape processors are revised to support the simultaneous archive file copies feature. Site modifications to these procedures must be evaluated and reapplied regardless of which version of the magnetic tape processors is being used.

The released intercept procedures for requesting and detaching an archive file for a magnetic tape processor are revised to accommodate multiple file connections and site information from the archive request. The following existing procedures are affected:

```
REQUEST_TAPE_ARCHIVE_FILE
REQUEST_TAPE_ARCHIVE_FILE_2
REQUEST_PSEUDO_TAPE_ARC_FILE
DETACH_TAPE_ARCHIVE_FILE
DETACH_TAPE_ARCHIVE_FILE_2
DETACH_TAPE_ARCHIVE_FILE_3
DETACH_PSEUDO_TAPE_ARC_FILE
```

The released intercept procedures for detaching an archive file, requesting a file for file retrieval, and declaring an archive file available for a magnetic tape processor are revised to accept a tape volume set of up to 100 volumes instead of 25. The range of the input parameter, volume_count, has been expanded from 25 to 100. The following existing procedures are affected:

```
DETACH_TAPE_ARCHIVE_FILE
DETACH_TAPE_ARCHIVE_FILE_2
DETACH_TAPE_ARCHIVE_FILE_3
DETACH_PSEUDO_TAPE_ARC_FILE
REQUEST_TAPE_RETRIEVAL_FILE
REQUEST_PSEUDO_TAPE_RET_FILE
DECLARE_ARCHIVE_TAPE_AVAILABLE
DECLARE_ARCHIVE_TAPE_AVAILABLE2
DECLARE_ARCHIVE_TAPE_AVAIL_RMS
DECLARE_PSEUDO_TAPE_AVAILABLE
```

Process Flow

When multiple simultaneous archive copies are requested during an archive session, the archive processor makes a separate call to the intercept procedure to request a file for each copy. It passes the attributes of the processor that will own the copy to the intercept procedure. All files must have the same physical device class and all tape files must have the same label type of labeled or unlabeled. When all the files have been requested, the processor determines the device class of the files and the tape densities being used. For magnetic tape device class, it reserves the appropriate tape units. For mass storage device class for a pseudo tape processor, it computes the pseudo VSN numbers for each file from the unique name supplied by the intercept procedure. The processor creates a file connection for the archive file to each of the copy files in order to write them simultaneously. After the archive file has been written, the processor deletes the file connections and makes a separate call to the intercept procedure to detach each copy file.

Magnetic Tape

The existing released procedures, REQUEST_TAPE_ARCHIVE_FILE and REQUEST_TAPE_ARCHIVE_FILE_2, request a magnetic tape archive file using the REQUEST_MAGNETIC_TAPE command. A CHANGE_TAPE_LABEL_ATTRIBUTES command has been added to position the file properly for writing and to rewrite the labels. This command is now required because these actions are not performed automatically for a connected file. No command may be used that opens this file in this procedure since the tape unit has not been reserved yet. Requesting the file and changing or displaying the tape label attributes do not open the file.

Pseudo Tape

The existing released procedure, REQUEST_PSEUDO_TAPE_ARC_FILE, generates a unique name and requests a mass storage permanent file with this name as the archive file. The file access procedure is no longer used to map this unique name into pseudo VSN numbers for the archive processor. This unique name is now set by the intercept procedure in the file attribute, USER_INFORMATION, of the local file name for the attached permanent file. The mapping of the unique name into pseudo VSN numbers is performed by the archive processor. The dollar sign prefix (\$) is removed and the remaining characters of the name are split into parcels of six characters each. Previously, the unique name was assumed to be 31 characters which yielded five VSN numbers for the archive file. A shorter name yielding fewer VSN numbers may now be used. The file access procedure is retained at this time. However, the file access procedure function, AMCFETCH_ACCESS_INFORMATION_RQ, is no longer available since it is unusable by a tape processor for a connected file.

MANAGE_ARCHIVE_IMAGES Utility

PSR AR20431 introduces a modification so that the subcommand CONSOLIDATE_ARCHIVE_IMAGES marks each file being consolidated. This ensures the specific archive image selected for consolidation cannot be counted as a releasable archive image. If a file has more archive images than are required for the file to be released, it is still possible for that file to be released in the middle of a consolidation. Such a release does not lose data since there are other archive images of the file which meet the requirement for copies needed.

If an interactive break (%2) should occur in the middle of the subcommand, all of the affected archive images are cleaned up and reset to a releasable state. The cleanup is also invoked for other abnormal exits. However, if a fatal system crash should occur in the middle of consolidation, it is possible that some of the files will remain unreleasable. If this occurs, an attempt to release the file does not count the affected archive image and fails to release the file. This condition is indicated in the summary file of the GENERATE_ARCHIVE_REPORT utility. CONSOLIDATE_ARCHIVE_IMAGES sets the field RELEASABLE=FALSE.

At this time, the only way to clear the condition is to re-execute the CONSOLIDATE_ARCHIVE_IMAGES subcommand with a set of parameters that select the same archive images as consolidation candidates.

Two CONSOLIDATE_ARCHIVE_IMAGES commands should not be executed in parallel if they consolidate archive images of the same file. PSR AR20431 prevents complete loss of data in such cases. Parallel runs are not recommended because one of the archive images may be lost if one CONSOLIDATE_ARCHIVE_IMAGES releases file data from disk just as another CONSOLIDATE_ARCHIVE_IMAGES attempts to re-archive the same file.

Archive/VE Diagnostic Messages

Archive/VE diagnostic messages added with this release are not documented in the NOS/VE Diagnostic manual. The next update of the manual will contain these messages.

Incompatibilities

Code that went into NOS/VE 1.7.1 L803 requires this product match the operating system level at L803.

Catalog and File Management

3

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This chapter contains information about file attributes, the opening, closing, and copying of files and catalog and file management commands.

Feature Descriptions

DELETE_CONFIRMATION Parameter Added

The DELETE_CONFIRMATION parameter is now available on the DELETE_ALL_FILES subcommand of the BACKUP_PERMANENT_FILES utility. This parameter is of type boolean. If its value is TRUE, a menu is presented to the user or the system operator to confirm the deletion of files. If its value is FALSE, deletion is automatically done. The default value of this parameter is TRUE if you are executing in an interactive job or at the system console. The default value is FALSE if you are executing from a batch job. This parameter is documented in the NOS/VE System Performance and Maintenance manual, Volume 2 (60463925).

Notes and Cautions

CHANGE_CATALOG_CONTENTS Command

The CHANGE_CATALOG_CONTENTS command is documented in the NOS/VE Operations manual (60463914).

Execution Ring

When a System or Family Administrator uses the CHANGE_CATALOG_CONTENTS (CHACC) command, it should be executed at ring 3. Otherwise, files that are more privileged than the ring of execution of the command are skipped.

DELETE_DAMAGE_CONDITION Parameter

When this parameter is selected, it is recommended that you do not run BACKUP_PERMANENT_FILES (BACPF) in the background. The BACKUP_PERMANENT_FILES utility backs up all files including damaged files. Backing up a damaged file causes a *cycle busy* condition that prevents the deletion of the damage condition(s). Skipped files are not reported to the OUTPUT file.

DELETE_UNRECONCILED_FILES Parameter

If this parameter is set to TRUE by a System Administrator, it is necessary to execute the command in ring 3 and on an idle system to ensure that all files are processed.

Unreconciled files that are busy are neither deleted nor reported in the OUTPUT file.

UPDATE_CYCLE_STATISTICS Default

The UPDATE_CYCLE_STATISTICS restore option default for RESTORE_PERMANENT_FILES has been changed to FALSE if you enter the RESTORE_PERMANENT_FILES utility as a system or family administrator. If you are neither a system or family administrator, the default value is TRUE.

The only change for a user who is not a system or family administrator is that the RESTORE_ALL_FILES subcommand defaults UPDATE_CYCLE_STATISTICS to TRUE instead of FALSE. When a cycle is restored with TRUE for the value of UPDATE_CYCLE_STATISTICS, the modification date/time and data modification date/time are set to the current time. This ensures that the restored files are included in the next partial backup.

The change for system and family administrators is that the RESTORE_CATALOG, RESTORE_EXISTING_CATALOG, RESTORE_FILE, RESTORE_EXISTING_FILE, RESTORE_EXCLUDED_FILE_CYCLES, and RESTORE_OBJECT subcommands default UPDATE_CYCLE_STATISTICS to FALSE instead of TRUE. When a cycle is restored with FALSE for the value of UPDATE_CYCLE_STATISTICS, the modification date/time and data modification date/time are set to the values they had when the cycle was backed up. This change was made for the following reasons:

- Files that are archived but not released at the time of backup have their data restored to mass storage and the archive information that is restored describes valid archive images. Setting the value of UPDATE_CYCLE_STATISTICS to TRUE restores the data but the archive information that is restored is no longer valid. It is not possible to release the data for files in this state.
- Files archived and released at the time of backup do not have their data restored to mass storage. If the value of UPDATE_CYCLE_STATISTICS is set to TRUE, the archive information that is restored is no longer valid. An attempt to access a file in this condition causes a PFE\$UNDEFINED_DATA condition to be returned.

RESTORE_ALL_FILES Listing Change

The listing produced by executing the RESTORE_ALL_FILES command in the RESTORE_PERMANENT_FILE utility has been changed to show the master catalog path of files being restored. For example, if the master catalog has the following contents:

```
:COBALT.MDG.M1      { file in master catalog MDG }
:COBALT.MDG.M.A     { file in subcatalog M }
:COBALT.MDG.M.B     { file in subcatalog M }
:COBALT.MDG.M2      { file in master catalog MDG }
```

In previous releases, the output from the RESTORE_ALL_FILES command was something like the following:

```

RESTORE_ARCHIVE_INFORMATION = FALSE

LISTING PRODUCED BY
RESTORE ALL FILES:
09/13/91 08:37:47.247

CATALOG
  PF_NAME
  PF_NAME.CYCLE                                SIZE      MODIFICATION DATE/TIME
-----
  M1
  M1.1                                           43          09/13/91 08:34:00.869
:COBALT.MDG.M
-- CATALOG ALREADY EXISTS
  A
  A.1                                           43          09/13/91 08:34:08.955
  B
  B.1                                           43          09/13/91 08:34:12.060
  M2
  M2.1                                           43          09/13/91 08:34:03.383

RESTORE SUMMARY:
NUMBER OF CYCLES RESTORED:  4
TOTAL CYCLE DATA RESTORED: 172

```

With this release of NOS/VE, the output is:

```

RESTORE_ARCHIVE_INFORMATION = FALSE

LISTING PRODUCED BY
RESTORE ALL FILES:
09/13/91 08:36:45.292

CATALOG
  PF_NAME
  PF_NAME.CYCLE                                SIZE      MODIFICATION DATE/TIME
-----
:COBALT.MDG
  M1
  M1.1                                           43          09/13/91 08:34:00.869
:COBALT.MDG.M
-- CATALOG ALREADY EXISTS
  A
  A.1                                           43          09/13/91 08:34:08.955
  B
  B.1                                           43          09/13/91 08:34:12.060
:COBALT.MDG
  M2
  M2.1                                           43          09/13/91 08:34:03.383

RESTORE SUMMARY:
NUMBER OF CYCLES RESTORED:  4
TOTAL CYCLE DATA RESTORED: 172
RESTORE_ARCHIVE_INFORMATION = FALSE

```


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This chapter describes new CDCNET features used with NOS and NOS/VE systems.

Feature Descriptions

CDCNET Features

The following features have been added to CDCNET:

- IP broadcast support over HDLC
- IP filter
- Support of the `CREATE_TELNET_CONNECTION` command
- HDLC extended window/sequence
- Directory version 3 default
- Protocol trace support
- X.25 switch

These features are described below.

IP Broadcast Support Over HDLC

CDCNET now supports IP (Internet Protocol) packets to be sent over trunks. The following changes were made to support IP Broadcast over HDLC networks:

- The `DEFINE_IP_NET` command now allows IP Broadcast to be configured for an HDLC IP network.
- IP Broadcast messages received over an HDLC IP net are no longer ignored.
- IP datagrams that were received via broadcast from the network are not rebroadcast.

IP Filter

This feature gives a user the capability to allow and disallow IP PDUs received on specified networks based on specified source and destination addresses. The IP filter is added, deleted, and displayed using the following commands:

- `ADD_IP_FILTER`
- `DELETE_IP_FILTER`
- `DISPLAY_IP_FILTER`

These commands are documented in the CDCNET Commands manual (60000414).

Support of the CREATE_TELNET_CONNECTION command

CDCNET now supports the NOS/VE CREATE_TELNET_CONNECTION command. See the NOS/VE Commands and Functions manual for a complete description of the command. This command allows you to temporarily switch connections from the current NOS/VE job to a remote host. The command creates a User Telnet connection to the remote host allowing you to enter remote host commands and display remote host output. When you log out from the remote host, you return to your original job.

CDCNET has two new commands for handling the Telnet connection:

- CHANGE_TELNET_SERVICE_NAME
- DISPLAY_TELNET_SERVICE_NAME

These commands are documented in the CDCNET Commands manual (60000414).

HDLC Extended Window/Sequence

HDLC now allows extended windowing by defining a HDLC trunk with a MAXIMUM_UNACKNOWLEDGED_FRAMES between 8 and 127. This also configures extended sequencing. Remote loads can also be accomplished using a HDLC interface defined with extended windowing.

Allowing a larger number of frames to be outstanding before an acknowledgement is required minimizes the effect of latency in long communication links.

Directory Version 3 Default

Support for Directory Version 3 was introduced in NOS/VE 1.5.3, L765. This enhancement significantly reduced directory traffic in large networks. Version 3 at L765 was selectable with the CHANGE_NAM_ATTRIBUTES operator command. Version 2 was the default version for use in L765 because it was required for communication with any CDCNET or NOS/VE systems running at earlier levels.

In this release, Version 3 has been set as the default version for use at deadstart. If you have a requirement to communicate with CDCNET or NOS/VE systems that are running at a level earlier than L765, use the CHANGE_NAM_ATTRIBUTES command to reset the directory version to 2. Note that all CDCNET and NOS/VE systems at L765 or later are capable of responding to directory requests using either Version 2 or 3, regardless of their default version setting. The initial value for the VERSION parameter of the CHANGE_DIRECTORY NETOU command is now 3. All DIs in the configuration must be running CDCNET Release (A101) or later in order to receive and process Version 3 Directory PDUs.

Protocol Trace Support

This feature allows tracing of the channel connection dependent file access, directory, DOD-internet, ES to IS routing, HDLC, LLC-2, RIP, system tasks, transport, and X.25 protocols. Support for protocol trace is now handled by the following commands:

- DISPLAY_TRACE_PROCESS
- START_TRACE_PROCESS

- **STOP_TRACE_PROCESS**

These commands are documented in the CDCNET Commands manual (60000414).

X.25 Switch

CDCNET now has a general purpose X.25 switch definition. The X.25 Gateway uses this switch definition to route incoming X.25 calls to another X.25 Gateway within the CDCNET network and ultimately back out to a PDN. The following three commands have been added to support the X.25 switch definition:

- **ADD_X25_SWITCH**
- **DELETE_X25_SWITCH**
- **DISPLAY_X25_SWITCH**

These commands are documented in the CDCNET Commands manual (60000414).

TCP/IP Features

This section describes features added to the TCP/IP part of CDCNET. Those features include:

- **RIP support over HDLC**
- **NQS feature**
- **TELNET feature**
- **TFTP features**

Each feature is described below:

RIP support over HDLC

CDCNET now supports RIP (Routing Information Protocol) over HDLC networks.

NQS Feature

NQS contains the following feature:

NQS Support of Station Parameter

This feature adds the STATION parameter to the SUBMIT_NQS_JOB (QSUB) command. When the OUTPUT_DISPOSITION parameter is set to PRINTER, the STATION parameter allows the user to specify a particular printer station. If the QSUB command is used to submit a job from one NOS/VE system to another NOS/VE system, the STATION parameter has the desired effect only if this feature is available on both systems and the printer station is accessible from the system executing the submitted job. For a complete description of the SUBMIT_NQS_JOB command, see the NOS/VE Network Management manual (60463916).

TELNET Feature

CDCNET Telnet products now support terminal type option negotiation.

NOTE

If you have written procedures or scripts that request terminal type or `TERMINAL_MODEL` (TM) attributes (on previous versions of CDCNET), you may want to alter or remove them to take advantage of the feature. The results with the feature is the same as entering the `CHANGE_TERMINAL_ATTRIBUTE` command with the `TERMINAL_MODEL` attribute.

Support is added for the terminal type option in the following CDCNET TCP/IP Telnet products:

- User Telnet Gateway
- Server Telnet Gateway
- Telnet TIP

User Telnet Gateway

User Telnet Gateway acts as a Telnet Client. Previously, the User Telnet Gateway did not respond to terminal type option negotiation. The terminal type option in the User Telnet Gateway now results in the CDCNET terminal user's Terminal Model (TM) attribute being passed to the Telnet Server host during the Telnet option negotiation portion of the Telnet connection establishment. The User Telnet Gateway responds to a server's `DO TERMINAL_TYPE` with a `WILL TERMINAL_TYPE`. When the server issues a `TERMINAL_TYPE SEND`, the User Telnet Gateway responds with `TERMINAL_TYPE IS <terminal model>`.

Server Telnet Gateway

Server Telnet Gateway acts as a Telnet Server. Previously, the Server Telnet Gateway did not initiate terminal type option negotiation. The Server Telnet Gateway now issues a `DO TERMINAL_TYPE` negotiation during Telnet connection establishment. If the Client responds with a `WILL TERMINAL_TYPE`, the Server Telnet Gateway issues a `TERMINAL_TYPE SEND` to request the client's terminal type. The terminal type value received is sent on the CDCNET connection as a VTP Change Attribute Request for the Terminal Model attribute. The terminal type is saved in the Server Telnet Gateway connection control block and passed via the CDCNET connection when requested by a VTP Status Attribute Request.

Telnet TIP

Telnet TIP acts as a Telnet Server. Users have the option to configure whether the terminal type option is negotiated during Telnet connection establishment. You can configure this using the `INITIAL_OPTION_NEGOTIATION` parameter on the `ADD_TELNET_SERVER` command. The keyword `DO_TTYPE` sets this option.

TFTP Features

Two features have been added to Trivial File Transfer Protocol (TFTP). They are:

- Security enhancement
- UNIX filename mapping

Security Enhancement

The TFTP Server on NOS/VE has new security enhancements. A site can now restrict access to files and directories by setting security and path name information in the INETD configuration file.

NOTE

Previous users of TFTP who do not alter their INETD configuration file and who continue to use only full NOS/VE path names will find no change in TFTP server behavior.

UNIX Filename Mapping

When the TFTP server receives a request to read or write a file, it examines the file or path name for certain delimiters. If they are found, TFTP assumes the file or pathname is in UNIX format and maps it to NOS/VE format.

OSI Features

This section describes the features added to the OSI part of CDCNET.

OSI Filter

This feature allows a site to control whether datagrams with selected source and/or destination Network Service Access Point (NSAP) addresses are to be routed or discarded. The OSI Filter is added, deleted, and displayed using the following commands:

- ADD_CLNS_FILTER
- DELETE_CLNS_FILTER
- DISPLAY_CLNS_FILTER

These commands are documented in the CDCNET Commands manual (60000414).

OSI Ping

CDCNET processes a request sent by a UNIX *ping* command (supported on EP/IX 1.4.2 or later) to check for OSI traffic (RFC1139). It does this as part of CLNS (ConnectionLess Network Service) using the following two methods:

Network Service Access Point (NSAP)

A *ping* sent to CDCNET using the NSAP checks the Network Selector to determine if the *ping* should be returned. It checks for the type of Network Selector, for example, a Transport Selector or an Echo Reply Selector. If it is an Echo Reply Selector, it returns a *ping*.

Protocol Data Unit (PDU)

A *ping* sent to CDCNET using the Echo Request PDU, returns a *ping*.

INETD Epilog File

You can now specify an epilog file on the `ACTIVATE_INETD` command. The commands in this file will be executed whenever the Internet Daemon job terminates.

The following SCL variables are defined for use by the commands in the epilog file:

```
osv$daemon_status: termination status for the daemon
osv$daemon_name: name of the daemon (INETD for the Internet Daemon)
osv$daemon_parameters: the parameter list from the ACTIVATE_INETD call
osv$daemon_command: the ACTIVATE_INETD command
```

The following is a sample epilog file. It will notify the system operator when the daemon terminates or aborts, and will restart the daemon after an abort.

```
IF osv$daemon_status.normal THEN
    send_operator_message m=$string(osv$daemon_name)/// ' job terminated.'...
    oc=system_operator
ELSE
    send_operator_message m=$string(osv$daemon_name)/// ' job aborted.' ..
    oc=system_operator
    include_command osv$daemon_command//osv$daemon_parameters
IFEND
```

PRINT_REMOTE_FILE Command

A new parameter, `USER`, has been added to the `PRINT_REMOTE_FILE` command. This parameter is defined as an `ADVANCED_USAGE` parameter, and its use requires the `LOGIN_USER` to have the new user capability `REMOTE_PRINT_ADMINISTRATION`. This field is created by a system administrator with the `MANAGE_USER_FIELDS` subutility of the `ADMINISTER_VALIDATIONS` utility. The capability is defined with the following command:

```
create_capability_field field_name=remote_print_administration ..
    default_value=exclude ..
    description='Submit remote print files for other users.' ..
    change_authority=system_administration ..
    manage_authority=system_administration
```

Additional Validation Information

Additional validation information is available to the site controlled LPD server procedures. This information consists of the fully qualified name and the IP address of the system sending the request to the server. This information is provided by new optional parameters on the procedures `VALIDATE_PRINTER`, `DISPLAY_UNIX_OUTPUT_STATUS` and `PRINT_UNIX_FILE`. These procedures reside in files with the same names in the catalog `$SYSTEM.TCP_IP.LPD`. Add to these procedures the following parameter definitions:

```

sending_host_address, sha: list 4 .. 4 of ..
    integer 0 .. 255 = $optional
sending_host_name, shn: string = $optional

```

LPD has been modified to optionally generate either or both of these parameters based on new parameters, `VALIDATE_SENDER_ADDRESS` and `VALIDATE_SENDER_NAME`, on the call made by the Internet Daemon when a connection for the LPD is received. These parameters are defined on the `DEFINE_SERVICE` command for the printer service in the file `$SYSTEM.TCP_IP.INETD_CONFIGURATION`. The modified definition for the printer service is:

"INETD configuration file entry for the lpd server"

```

Define_service ..
    service=printer ..
    application_name=OSA$LPD_SERVER ..
    debug_mode=off ..
    debug_mode_interactive=off ..
    initial_state=active ..
    parameter_string=..
        'DJC='$SYSTEM.TCP_IP.LPD.DISPLAY_UNIX_OUTPUT_STATUS' '//..
        'QJC='$SYSTEM.TCP_IP.LPD.PRINT_UNIX_FILE' '//..
        'VPC='$SYSTEM.TCP_IP.LPD.VALIDATE_PRINTER' '//..
        ' validate_sender_address=yes validate_sender_name=yes'..
    port=515 ..
    protocol=TCP ..
    service_task=$SYSTEM.TCP_IP.LPD.BOUND_PRODUCT ..
    starting_procedure=LPP$ACCEPT_LPD_CONNECTION

```

Note that the information provided is for the system sending the request to the LPD server. This may be the client system or it may be an intermediate system providing a 'store and forward' capability.

Notes and Cautions

DEFINE_SYSTEM Command

PSR AC1K810 changed the `DEFINE_SYSTEM` command. The `COMPRESS_DUMP` parameter default is now `FALSE`. This change was made to improve dump analysis. Because of this change, DI dumps are larger. For example, a 2 megabyte memory dump should not be much larger than in previous releases, but an 8 megabyte memory dump will be larger. For this reason, you should monitor this use of disk space and remove old copies of dumps from the disk.

Removal of TCP/IP Gateway

Support for the TCP/IP Gateway for NOS/VE has been removed in this release. If your site has already converted to use the TCP/IP Communications Device capability, this change will have no impact. Otherwise, it will be necessary to make this conversion either before or during this upgrade.

Customer applications that use TCP/IP communications do not need to be recompiled or rebound. However, rebinding with the new IPAM runtime library, \$SYSTEM.TCP_IP.IPF\$LIBRARY, is recommended in order to take advantage of the reduced code size of the modified library.

Internet Daemon Configuration File Processing

The processing of the Internet Daemon configuration file, which resides in the \$SYSTEM.TCP_IP.INETD_CONFIGURATION catalog, has been changed to use NOS/VE SCL procedures instead of the parsing routines embedded in the product code. Changes may be required to the configuration file to meet the requirements of the standard SCL syntax rules. Note that these changes can be made in a manner that allows backward compatibility, that is, with the changes in place, either the new products or the older products will function correctly.

Known differences between the two syntax definitions are:

- SCL does not allow spaces before or after the string concatenation token, while the Internet Daemon processor would remove them before evaluation. A compatible change is to manually remove such spaces from the file.
- SCL considers an ellipsis at the end of a comment line to continue the comment to the next line, while the Internet Daemon processor terminates a comment at the end of the line. If a service definition has been commented out, place a comment delimiter (double quote) at the end of each line of the definition in addition to the one at the beginning of the line.

Incompatibilities

Code that went into NOS/VE 1.7.1 L803 requires the following CDCNET products match the operating system level at L803:

FTAM/VE
NFS
NQS

C Version 2 Compiler5

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Get SCL String Variable	5-1
Notes and Cautions	5-1
C2F\$LIBRARY Value Changed	5-1

This chapter contains information about C Version 2. The product is described in the C Version 2 manual (60469831).

Feature Descriptions

Get SCL String Variable

C Version 2 now contains the GET_SCL_VALUE function. The function is used to obtain the value of an SCL string variable. This function has the following definition:

```
char * GET_SCL_VALUE(char *scl_variable_name);
```

Both the name of the function and the SCL variable name must be in capital letters. If the variable can not be accessed, a NULL value is returned. The variable is considered to be unaccessible if the variable is not present, the variable is not a string type, or the string value is greater than 255 characters.

Notes and Cautions

C2F\$LIBRARY Value Changed

The file variable C2F\$LIBRARY is now set to \$SYSTEM.C.VCF\$LIBRARY. In previous versions it was set to \$SYSTEM.CV2.C2F\$LIBRARY. The libraries are identical but the duplication wasted space and occasionally caused the C2F\$LIBRARY variable to point to an older version of the library. The VCF\$LIBRARY is installed as part of PPM which is part of the normal NOS/VE installation. The VCF\$LIBRARY is present even if C/VE is not installed.

Most users will see no effect from this change. However, any references to the full path name must be changed and we recommend the file variable C2F\$LIBRARY be used instead of the full path name.

Incompatibilities	6-1
-------------------------	-----

This chapter contains information about Desktop/VE. Desktop/VE permits workstation users to manipulate NOS/VE files and applications using the workstation's mouse. Desktop/VE supports the Apple Macintosh 512K, Macintosh Plus, Macintosh SE, and Macintosh II.

Incompatibilities

Code that went into NOS/VE 1.7.1 L803 requires this product match the operating system level at L803.

EDIT_CATALOG

7

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Incompatibilities	7-1

This chapter contains information about EDIT_CATALOG (EDIC), the NOS/VE full screen utility for catalog and file management.

Feature Descriptions

Viewing Files

The View function within EDIT_CATALOG now contains three new functions:

- LOCATE_NEXT
- LOCATE_PREVIOUS
- WIDTH

The LOCATE_NEXT and LOCATE_PREVIOUS functions request a character string and move the cursor to the next or previous occurrence of the string. If only the Return key is pressed, LOCATE_NEXT and LOCATE_PREVIOUS use the same string as the previous instance of one of the function keys.

The WIDTH function allows the user to view files on terminals capable of displaying up to 132 columns. This function is similar to the WIDTH function in the EDIT_FILE utility.

In addition to the new functions described above, the \$CF (current file) function has been expanded to be used with the function keys as well as the home line commands.

Incompatibilities

Code that went into NOS/VE 1.7.1 L803 requires this product match the operating system level at L803.

Feature Descriptions	8-1
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This chapter describes new features in IM/BASISplus. IM/BASISplus provides database management functions on NOS/VE.

IM/BASISplus release L1FP004 is a replacement product to the IM/BASISplus release L1FP001 which was released under NOS/VE Level 780. It retains all features of the predecessor product.

The following products comprise the IM/BASISplus system:

- IM/BASISplus base system (DM)
- IM/BASISplus query facility (FQM)
- IM/BASISplus report writer (RW)
- IM/BASISplus COBOL precompiler (CPC)
- IM/BASISplus FORTRAN precompiler (FPC)
- IM/BASISplus EXPRESS
- IM/BASISplus EXPRESS-W
- IM/BASISplus Connect
- IM/BASISplus Thesaurus Manager (TM)
- IM/BASISplus Document Handler Interface (DHI)
- IM/BASISplus Network Access Module (NAM)
- IM/BASISplus Stornet

The BASISplus High Volume Update (HVU) product is now available as part of the BASISplus base system (DM).

Feature Descriptions

This release of IM/BASISplus provides the following enhancements:

Improvements in kernel CPU and I/O have improved the response time of several FIND commands.

Indexes created as a result of using the OPEN/DIRECT option of HVU are reduced in size.

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Selecting a Mainframe for a Job	9-2
Modifying the Load Leveling System Module	9-3
NOS/VE Commands and Function Changes	9-5

This chapter contains information about the scheduling, submitting, and controlling of NOS/VE jobs and output files.

Feature Descriptions

Interactive Load Leveling

A multimainframe site can now load level interactive jobs across the mainframes in a cluster if CDCNET is the communications network and NOS/VE File Server connects the mainframes. When the system distributes the jobs among the mainframes, it is transparent to the user. If NOS/VE currently levels batch jobs across mainframes in a mainframe cluster, users can tell the system to also level their interactive jobs by specifying VE on the JOB_DESTINATION_USAGE parameter of the LOGIN command. If a site wants interactive jobs leveled by default, it must change the JOB_DESTINATION_USAGE job attribute default on each mainframe participating in load leveling.

If your site does not currently level batch jobs, you can activate load leveling of interactive and/or batch jobs by following the directions given under Load Leveling in chapter 4 of the NOS/VE System Performance and Maintenance manual, volume 1. After completing the steps outlined in the manual, the system by default distributes batch jobs across the mainframes and executes interactive jobs on the mainframe on which they were submitted. To have interactive jobs also distributed by default, you must change the JOB_DESTINATION_USAGE job attribute default.

Changing the JOB_DESTINATION_USAGE Job Attribute Default

The job attribute default JOB_DESTINATION_USAGE specifies the default method the operating system uses to select a mainframe for job execution. To change the default method, use the CHANGE_JOB_ATTRIBUTE_DEFAULT (CHAJAD) command and specify the JOB_MODE and JOB_DESTINATION_USAGE parameters. In a multimainframe environment, you must specify the command on each mainframe in the cluster.

The JOB_DESTINATION_USAGE parameter is new to the CHAJAD command; its description follows:

JOB_DESTINATION_USAGE or JDU

Specifies how the system selects a mainframe to execute a job in a multimainframe environment. JOB_DESTINATION_USAGE can have one of the following values:

VE

Instructs the system to select a mainframe for job execution.

VE_FAMILY

Instructs the system to execute the job on the server mainframe; the mainframe that maintains the permanent files for the login family.

VE_LOCAL

Instructs the system to execute the job on the mainframe on which the job is submitted. This is the released default value for an interactive job.

VE_QTF

For an interactive job, instructs the system to select a mainframe for job execution.

For a batch job, selects a mainframe based on the login family. If the login family resides on a mainframe in the cluster, VE_QTF instructs the system to select a mainframe in the cluster for job execution; otherwise, the system queues the job for the Queued File Transfer Facility (QTF). This is the released default value for batch jobs.

If neither QTF nor File Server is installed at your site, this parameter is ignored.

For example, to change the value of JOB_DESTINATION_USAGE job attribute default so that interactive jobs are leveled across the mainframes, enter the following system operator command on each mainframe in the cluster:

```
change_job_attribute_default job_mode=interactive job_destination_usage=ve
```

Selecting a Mainframe for a Job

If a site activates leveling of jobs, either the operating system or the user can select the mainframe for a job. By default, the operating system selects the mainframe using the JOB_DESTINATION_USAGE job attribute default. (For interactive jobs, a site can modify the system module the operating system uses to select a mainframe.)

A user specifies a method of mainframe selection on the new JOB_DESTINATION_USAGE parameter of the LOGIN command. Its description follows:

JOB_DESTINATION_USAGE or *JDU*

Specifies how the system selects a mainframe to execute a job in a multimainframe environment. Enter a name or one of the following keyword values:

NTF

Queues the batch job for the Network Transfer Facility (NTF).

QTF

Queues the batch job for the Queued File Transfer Facility (QTF).

VE

Instructs the system to select a mainframe for job execution.

VE_FAMILY

Instructs the system to execute the job on the server mainframe; the mainframe that maintains the permanent files for the login family.

VE_LOCAL

Instructs the system to execute the job on the mainframe on which the job is submitted. This is the released default value for an interactive job.

VE_QTF

For an interactive job, instructs the system to select a mainframe for job execution.

For a batch job, selects a mainframe based on the login family. If the login family resides on a mainframe in the cluster, VE_QTF instructs the system to select a mainframe in the cluster for job execution; otherwise, the system queues the job for the Queued File Transfer Facility (QTF). This is the released default value for batch jobs.

Modifying the Load Leveling System Module

You can modify the leveling modules so the selection of mainframes for interactive jobs fits your site's needs. If a site activates leveling on a mainframe that executes only batch jobs, the system module must be modified so that interactive jobs will not be sent to that mainframe for execution.

The process of modifying system modules is described in chapter 6, Site Tailoring, of the NOS/VE System Performance and Maintenance manual, volume 2. In addition, you need the following information:

Modules:	JMM\$SELECT_INTERACTIVE_JOB_DEST JMM\$MAINFRAME_GET_LEVELING_DATA
Procedures:	JMP\$SELECT_INTERACTIVE_JOB_DEST JMP\$MAINFRAME_GET_LEVELING_DATA
Compile commands:	COMPILE_SELECT_JOB_DEST COMPILE_GET_LEVELING_DATA
Object library:	\$SYSTEM.SITE_OS_MAINTENANCE.OSF\$BOUND_JOB_TEMPLATE_23D

Before NOS/VE queues an interactive job, it calls the JMP\$SELECT_INTERACTIVE_JOB_DEST procedure and provides the procedure a list of mainframe identifiers whose validation categories match the job's requirements and additional information about the interactive job.

The JMP\$SELECT_INTERACTIVE_JOB_DEST procedure selects the mainframe for the job. To determine which mainframe to use, the released procedure first calls the JMP\$CLUSTER_GET_LEVELING_DATA procedure to gather data about interactive jobs on all mainframes in the cluster. The JMP\$SELECT_INTERACTIVE_JOB_DEST procedure requests that the JMP\$CLUSTER_GET_LEVELING_DATA procedure gather the following values; a site can modify the JMP\$SELECT_INTERACTIVE_JOB_DEST procedure and have it request additional or different values:

- The value of the ENABLE_JOB_LEVELING scheduling control attribute
- The value of the MAXIMUM_ACTIVE_JOBS system attribute
- The number of active jobs in the service class
- The number of queued jobs in the service class

- The number of jobs terminating in the service class

The JMP\$SELECT_INTERACTIVE_JOB_DEST procedure uses this data to determine which mainframe should execute the job. The procedure keeps the number of interactive jobs on each mainframe at an equal percentage of the maximum active jobs value by using the following algorithm:

```

max_room_in_class = 0
selected_mainframe = "null mainframe id"
FOR each mainframe in cluster
  IF mainframe_id IN mainframe_list, and mainframe has job leveling enabled THEN
    room_in_class = (max_active_jobs - current_active_jobs - ..
      swapped_jobs - queued_jobs)/max_active_jobs
    IF room_in_class > max_room_in_class THEN
      max_room_in_class = room_in_class
      selected_mainframe = mainframe_id
    IFEND
  IFEND
FOREND

```

The JMP\$SELECT_INTERACTIVE_JOB_DEST procedure calls the JMP\$CLUSTER_GET_LEVELING_DATA procedure to gather the data. (You can modify JMP\$SELECT_INTERACTIVE_JOB_DEST so it calls a site procedure rather than JMP\$CLUSTER_GET_LEVELING_DATA, but you cannot modify JMP\$CLUSTER_GET_LEVELING_DATA.) The JMP\$CLUSTER_GET_LEVELING_DATA procedure gathers the data by initiating calls to each mainframe in the cluster. The calls specify the list of requested values and the work area to receive the requested values. Each call initiates the JMP\$MAINFRAME_GET_LEVELING_DATA procedure on a mainframe.

The JMP\$MAINFRAME_GET_LEVELING_DATA procedure gathers the requested job data. As released, this procedure calls the JMP\$GET_ACTIVE_SCHEDULING_ATTR procedure to gather the requested data. If you change the data requested by the JMP\$SELECT_INTERACTIVE_JOB_DEST procedure, you may need to change the JMP\$MAINFRAME_GET_LEVELING_DATA procedure. The changed procedure may call site-written procedures rather than or in addition to the JMP\$GET_ACTIVE_SCHEDULING_ATTR procedure.

If your site decides that new data is not needed for selecting a mainframe for every interactive job, you can change the JMP\$SELECT_INTERACTIVE_JOB_DEST procedure so that it saves collected data and updates it at specified time intervals.

NOS/VE Commands and Function Changes

To support the leveling of interactive jobs feature, the following commands and functions have new parameters or parameter options:

Command or Function	Description of Change
CHANGE_JOB_ATTRIBUTE_DEFAULT	The new JOB_DESTINATION_USAGE parameter is described in Selecting a Mainframe for a Job.
DISPLAY_JOB_ATTRIBUTE_DEFAULT	The DISPLAY_OPTION parameter has a new keyword: JOB_DESTINATION_USAGE (or JDU).
JOB	The default for the JOB_DESTINATION_USAGE parameter is the job attribute.
\$JOB_DEFAULT	The ATTRIBUTE parameter has a new keyword: JOB_DESTINATION_USAGE (or JDU).
LOGIN	The new JOB_DESTINATION_USAGE parameter is described in Selecting a Mainframe for a Job.
SUBMIT_JOB	The default for the JOB_DESTINATION_USAGE parameter is the job attribute.

See the NOS/VE Commands and Functions manual (60464018) for documentation of the commands.

Magnetic Tapes

10

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Tape Subsystem Commands	10-1

This chapter contains information regarding magnetic tape usage.

Feature Descriptions

Tape Subsystem Commands

The tape subsystem now contains two new commands: `CHANGE_TAPE_SCAN_FREQUENCY` and `DISPLAY_TAPE_SCAN_FREQUENCY`. These commands allow the operator to change and display the length of time between tape scans. These commands are documented in the NOS/VE Commands and Functions manual (60464018).

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This chapter highlights new features in Mail/VE Version 2, an electronic mail utility used to send and receive letters between mailboxes. Mail/VE Version 2 is an X.400 standard multi-host mail system with gateway capability to RCF821 and RCF822 standard mail systems. Mail/VE is documented in the Mail/VE Version 2 Usage manual (60464514) and the Mail/VE Version 2 Administration manual (60464515).

NOTE

Control Data has dropped support of Mail/VE Version 1. A user can now initiate Mail/VE Version 2 with the following command and aliases: EMAIL, EMA, MAIL, or MAI.

Feature Descriptions

Extensions

Additional subcommands and functions have been added to the utilities and subutilities to make writing procedures easier.

For all Mail/VE utilities and subutilities, except for the FILTER_MAIL subutility, users can execute global prologs, user prologs, and epilogs.

Mail/VE now allows the user to create and maintain a signature file. The signature file can be appended to the end of the letter text.

Filter_Mail Subutility

The new FILTER_MAIL subutility of the EMAIL utility allows users to select and order letters they want to appear in the Mail List screen.

Folders

This feature allows users to define one or more folders for use in filing mail. Folders allow users to easily save and organize their letters. A user can move a letter from a mailbox to a folder, from a folder to a mailbox, and from a folder to another folder. A letter in a folder is not affected by the expiration date.

Nicknames

This feature enables nicknames to be recognized and processed. This allows a complex address to be associated with a simple name or nickname. The nickname can then be used to access the complex address. Nicknames and associated addresses are contained in an address book.

Parameter Extensions

A user can directly use address information obtained from Mail/VE functions as input to Mail/VE subcommands. In order for the subcommands to accept a variety of address input, the address input parameters are modified.

Save and Forward

The `ACTIVATE_AUTOFORWARD` subcommand now contains a `KEEP` option. Specifying this option allows the user to resend mail and, at the same time, keep a copy for reference. The `ACTIVATE_AUTOFORWARD` subcommand (alias `ACTIVATE_RESEND`) allows the user to identify whether the letter is resent as an autoforwarded letter or as a resent letter (no forward letter header).

Abbreviated Address Display

The `DISPLAY_OPTION` of the `READ_LETTER` command now contains the `ABBREVIATED` option. Selecting this option displays all of the information from the full display but in a more compact form. This is useful in displaying X.400 address headers as it provides more viewing area on the screen.

Manage_Letter_Parts Subutility

The new `MANAGE_LETTER_PARTS` subutility of the `EMAIL` utility allows users to access letter parts nested within forwarded letters. Each letter part is given a numeric identifier, which can be used to select a subset of the letter for copying. You can copy letter parts to files.

MANAGE_MAIL_QUEUE Utility Enhancements

The `MANAGE_MAIL_QUEUES` utility has two new commands, `SELECT_MAIL_FILE` and `COPY_MAIL_FILE`. These commands provide capabilities similar to the `MANAGE_OUTPUT` Utility's `SELECT` and `COPY` commands. The Mail Administrator can select and copy files in the Generic Queue which are identified as mail files. Only the system administrator can select and copy those files not identified as mail files. Also, the `MANAGE_MAIL_QUEUES` Utility has been re-packaged so that it now executes at the caller's ring instead of ring 4. Files created by the `MANAGE_MAIL_QUEUES` Utility will have the ring attributes of the caller.

Menu Tailoring

When you use Mail/VE in screen mode, many of the screens include Menu and Option function keys. This release of Mail/VE allows users to tailor the windows the Menu and Option functions present.

TAILOR_MAIL Command

The `TAILOR_MAIL` command allows you to set many of your Mail/VE options. For example, you can specify whether you want to keep copies of letters you write. You can also create and maintain a signature file.

Additional Programmable Function Key

Mail/VE now provides a programmable function key (Shift-F3) for site use. This key is available on the Write, Write Reply, and Forward Letter screens.

Remove Mailbox/Distribution List Ownership Requirement

In previous versions of NOS/VE, the owner of a mailbox was the only one who could display owned mailboxes and distribution lists. With this release, that restriction has been removed. This allows users to obtain information about non-owned mailboxes and distribution lists.

SORT_MAIL Command Enhancement

In this release, the SORT_MAIL command has improved performance and sort options have been added. There is an average improvement of 90% in sorting mail by Subject and a 75% improvement in sorting mail by Originator. In addition to sorting mail by Subject and Originator, the user may now sort mail by Certification, Delivery Priority, Importance, and Sensitivity.

Restricted User

In addition to NONE and USER, MAILVE_ADMINISTRATION validation now contains the RESTRICTED capability. A user with this capability can create mailboxes and distribution lists. However, once created, the user cannot change values assigned to the address attributes, the permit type, the secure attribute, or the mailbox retention period. Also, the user with the RESTRICTED capability cannot delete mailboxes or distribution lists.

Notes and Cautions

Updating Mail/VE Databases

Because of the extension to the set of mailbox attributes, it is necessary to use the MANAGE_MAIL_DIRECTORY utility to back up the Mail/VE databases prior to installation of this version of Mail/VE. Following the installation, it is necessary to use the MANAGE_MAIL_DIRECTORY utility to restore the Mail/VE databases. A procedure to update the Mail/VE databases is contained in the Installation Handbook.

New Parameter on READ_LETTER Command

The MODE parameter is now available on the READ_LETTER command. If Mail/VE is operating in screen mode (Mail/VE entered in screen mode or ACTIVATE_SCREEN issued from /Mail prompt), the mode parameter determines the presentation mode of the READ_LETTER output. Specifying line causes the letter to be displayed in its normal manner. Specifying screen causes the letter to be displayed in the Read Letter screen.

Function Key Reassignment

Certain function key assignments have been changed on the major screens (Mail List, Read Letter, Write Letter, Forward Letter, and Reply to Letter). This is due, in part, to the ongoing migration of Mail/VE toward providing user/site tailoring of the Mail/VE user interface. All these screens now use F8 for Option and Shift-F8 for Menu. These are site or user tailorable menus which provide additional capabilities. In general Option entries are single-action commands; Menu entries are more complex submenus. Each screen has Option/Menu entries that are meaningful in the context of the particular screen.

Specifically, the changes are:

Screen	Change
Mail List	Menu and Option have been modified, but appear on the same keys.
Read Letter	Option moved from Shift-F6 to F8 and Reply moved from F8 to Shift F6.
Write Letter	Read was removed from Shift-F3 and Option is new on F8.
Write Recipient	Option is new on F8 and Menu is new on Shift-F8.
Forward	Option is new on F8 and Menu is new on Shift-F8.
Reply to Letter	Option replaces RepTo on F8 and Menu replaces RepAll on Shift-F8. The RepTo and RepAll functions are now in the Option menu.
Change/Create Mailbox	Option is new on F8 and Menu is new on Shift-F8.
Change/Create Distribution List	Option is new on F8 and Menu is new on Shift-F8.

In addition, some terminal-dependent functions may move to different keys, but, in general, they will appear in the same place across all major screens. This applies particularly to Help and Home.

Locally Developed Procedures

If the site has locally developed procedures which replace Mail/VE procedures for all users, they must now be replaced in the \$SYSTEM.MAILVE_V2.MVF\$MAIL_TOOLS library. Examples of this may be PRINT_SCREEN_LETTER and COPY_LETTER_TO_FILE.

If not all users use the same version of these procedures, they must be placed in a command library and the name of the command library file must be specified in JOB global variable MVV\$MAIL_TOOLS_LIBRARY. To minimize impact, this may be placed in either the user prolog or the SYSTEM_PROLOG. This will not work if placed in a Mail prolog file. In the following example, the procedures reside in the library \$USER.MAIL_COMMANDS:

```
VAR
  mvv$mail_tools_library: (JOB) file = $user.mail_commands
VAREND
```

Mail/VE searches the library specified by MVV\$MAIL_TOOLS_LIBRARY first, then it searches \$SYSTEM.MAILVE_V2.MVF\$MAIL_TOOLS. Neither of these appears on the command list.

Use caution when changing the CALL_MAIL_USER_MENU and CALL_MAIL_USER_OPTION commands and procedures. Future Mail/VE screen enhancements may be made available to users through the Menu and Option function keys. If you create your own versions of the function menus, the new capabilities would not be visible.

Change in Permission List Record of Functions

The permission list portion of the record returned by the following four functions has been expanded:

```
$DISTRIBUTION_LIST_ATTRIBUTE
$DISTRIBUTION_LIST_DEFINITION
$MAILBOX_ATTRIBUTE
$MAILBOX_DEFINITION
```

The new permission list portion of the returned record follows; the additional record fields are marked by a shaded bar in the margin:

```
Permission_List
1
  Address
    Personal_Name
      Surname           : 'Alliband'
      Given_Name        : 'Terry'
      Initials          : 'T'
      Generation_Qualifier : ''
    Organization_Units  : ('ARH', 'CSE')
    Organization_Name    : 'CPG'
    Private_Domain       : 'CDC'
    Administrative_Domain : 'ATMAIL'
    Country              : 'US'
    X121_Address         : ''
    Terminal_Identifier  : ''
    Ua_Identifier        : ''
    Domain_Defined_Attributes : "empty list"
  Permissions          : '(READ USE)'
```

Marking Letters in the Letter List

When letters in the letter list have been selected for marking (SELECT_LETTER command or the Select/EndSel keys on the mail list screen), the READ_LETTER, DELETE_LETTER, UNDELETE_LETTER, and RETAIN_LETTER commands operate as follows:

- If no value is specified for the letter parameter, the command selects and operates on all marked letters.
- If letters are marked and a keyword FIRST, LAST, NEXT, or PREVIOUS is specified for the letter parameter, the command selects the entry from the marked letter list relative to \$letter.
- If FIRST, LAST, NEXT, or PREVIOUS are specified as part of a range, all letters in the range, both marked and unmarked are selected.

Print and Copy Enhancements

The COPY_LETTER_TO_FILE and PRINT_SCREEN_LETTER procedures have been changed in 1.7.1. In previous versions of Mail/VE, part of the Copy and Print activities were performed internal to Mail/VE and part performed by the Copy and Print procedures. With this release, Mail/VE now calls the Print and Copy procedures directly. The procedures determine the screen from which the print/copy action was initiated and select the appropriate letter(s) for copying/printing.

COPY_LETTER_TO_FILE Command

The COPY_LETTER_TO_FILE command (invoked by the COPY function key) now copies to the destination_file.\$BOI rather than \$EOI.

UNSEEN_MAIL Condition

Previously, if you sent a letter to your own mailbox the UNSEEN_MAIL condition was not caused. Specify your own mailbox on the TO or CC list to cause the condition.

READ_LETTER Command

The READ_LETTER command output now wraps lines to adjust to the PAGE_WIDTH file attribute of the output file. This affects output from procedures that make use of this command such as COPY_LETTER_TO_FILE and PRINT_SCREEN_LETTER.

SELECT_MAIL_FILE Command

If a mail file was queued before the 1.7.1 system was installed, the SELECT_MAIL_FILE command of the MANAGE_MAIL_QUEUES (MANMQ) utility will not select the file unless MANMQ is called under SOU capability=SYSTEM_ADMINISTRATION. This is not necessary for files queued at 1.7.1 or later.

Future Considerations

Copy Letter Parts Command

In a future release of Mail/VE, the COPY_LETTER_PARTS command will be dropped. Capabilities provided by the COPY_LETTER_PARTS command are available in the MANAGE_LETTER_PARTS utility.

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This chapter contains the information about the Network Archive product. Network Archive is a CDCNET TCP/IP application that provides file backup and archival services to Control Data 4000 Series computers, Control Data 910/920 workstations, and Sun Workstations. Network Archive is documented in the NOS/VE File Archiving manual (60463944) and the CDCNET TCP/IP Programming Interfaces and Applications manual (60000214).

Feature Descriptions

Alternate Exports File

The Network Archive directives that were previously contained in the NFS exports file, `$SYSTEM.ETC.EXPORTS`, can now be placed in a Network Archive exports file, `$SYSTEM.ETC.NETARC_EXPORTS`. There is no change in the format of the directives.

When the `ACTIVATE_NETWORK_ARCHIVING` command is executed, the program searches for the `$SYSTEM.ETC.NETARC_EXPORTS` file. If it is found, then all directives are processed. If the file is not found, the program uses the directives in the `$SYSTEM.ETC.EXPORTS` file.

Configuration Information

Information about Network Archive processing and configuration is described in the man page *netarc(8)*. This includes descriptions of the mount point setup for Network Archive and using automount to mount Network Archive catalogs. The man page *arcname(1)* describes script file processing for Network Archive. In addition, the other man pages for Network Archive have been updated with various technical and editorial changes. Sample *Backup* and *Retrieve* scripts have been ported to the CDC 910.

Client Database Removal

The client database, which duplicated the server database, has been eliminated. This has greatly reduced the amount of disk space required for the Network Archive client. A slight performance improvement will also be seen on many of the Network Archive commands. The `ARCRA DB` command is no longer required. Sites should review their scripts so that they do not contain any references to the `ARCRA DB` command.

User Wildcard Support

The `ARCLIST`, `RETRIEVE`, and `RELEASE` commands now allow a wildcard for the user parameter. Detailed descriptions of this feature are contained in the following sections.

ARCLIST

The `ARCLIST` command now supports the asterisk (*) as a wildcard to specify the *user* parameter in the `-U <client>:<user>` option. The wildcard character is used to specify all users on the client. Note that the asterisk must be quoted ("*") to prevent expansion by the command line preprocessor.

RELEASE

The superuser can use the asterisk (*) as a wildcard in the `-u <user>` parameter of the **RELEASE** command. This allows the superuser to use one **RELEASE** command to release files belonging to all users. As described in the **ARCLIST** command above, the asterisk must be quoted ("*").

The `-u` parameter can be specified only by the superuser and only files on the requesting client whose archival status is current and meets the criteria of the command line are released. Archival status is considered current if the file has not been modified since being archived.

Care should be taken by the superuser to understand the result of executing various release commands.

RETRIEVE

The superuser can use the asterisk (*) as a wildcard in the `-u <user>` parameter of the **RETRIEVE** command. This allows the superuser to retrieve files belonging to all users with the same **RETRIEVE** command. As described in the **ARCLIST** command above, the asterisk must be quoted ("*").

The `-u` parameter can be specified only by the superuser.

Notes and Cautions

Improved Interface to Archive/VE

The **ARCHIVE_IT** SCL procedure now checks the results of Archive/VE. Should Archive/VE fail to archive one or more files, the following message is issued:

* ATTENTION ** - Network Archiving temporary disk space not
being released properly. Please notify site analyst.

The **ARCHIVE_IT** SCL procedure is intended to serve as an example and can be modified to meet site requirements.

Network File System 13

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This chapter contains information about the Network File System on NOS/VE (NFS/VE). NFS/VE is documented in the CDCNET TCP/IP Programming Interfaces and Applications manual (60000214).

Feature Descriptions

NIS/VE Compliant to SUN

NIS/VE is now fully compliant with SUN version NIS. For example, it is now possible to configure a CYBER as an NIS slave server. In previous releases, you had to do a YPSET for each domain. This is no longer necessary. YPSET is now optional.

NIS/VE Support for IP Broadcast

NIS/VE now supports IP (Internet Protocol) Broadcast. To support IP Broadcast, NIS/VE has the following new commands:

- ACTIVATE_YPXFRD
- DEACTIVATE_YPXFRD

To support IP Broadcast, MANAGE_YELLOW_PAGES has the following new commands:

- CREATE_YELLOW_PAGES_SLAVE_FILES
- GET_YELLOW_PAGES_MAP

New Subcommand for VFSU

The VFSU utility has a new subcommand:

```
set_user, setu, su
user, u: application = $required
```

The subcommand changes the user's UNIX identity that is used by NFS for file access validation to the name or uid provided.

Using this command, the system administrator can perform administration duties that can be done under the *root* user on UNIX on VFS file systems.

This command can only be used when VFSU is started from within SOU with system administration active.

New Option on Exports Entry

A new option, `arch=hold`, has been added to the exports entry.

When `arch=hold` is specified for an exported directory and a client tries to reference an archived file, the file is fetched and no response is sent to the client until the file is reloaded. Thus, the client's requesting process will hang until the file is reloaded. If it takes a long time to reload the file, the client process will display timeout messages and may abort.

If `arch=hold` is not specified for an exported directory, the old behavior of responding to the request with an `EBUSY` error will be done.

The following lines illustrate the new option on the exports entry:

```
/cobalt/limited -access=odeon,arch=hold
/cobalt/tmp -root=odeon:aquila
/cobalt/demo -root=aquila,arch=hold
```

ONC/NFS 4.1.1

This release of NOS/VE contains version 4.1.1 of ONC/NFS from Sun Microsystems, Inc.

Notes and Cautions

ONC/NIS Daemon Exit Processing

The behavior of the ONC/NIS daemons when they fail has been changed. All the daemons have consistent processing when they abort or are terminated. The site now has the ability to override this behavior.

The parameter

```
epilog, e: file = nfd$epilog, $system.tcp_ip.onc.epilog
```

has been added to the following commands:

```
activate _ipc_applications
activate _portmap
activate _nfs
activate _pcnfs
activate _nlm
activate _ypbind
activate _ypserv
activate _yppasswdd
activate _ypupdated
activate _ypxfrd
```

The parameter specifies a file that is included into the job when the job exits because it was deactivated or it aborted. If the file does not exist, default action is taken as follows:

- Exit if the daemon was deactivated (terminated via `terminate_job`).

- Start a new job to run the daemon and send the operator a message when the job had run at least 5 minutes before it failed.
- Send the operator a message and exit without starting a new copy when the job had run less than 5 minutes before it failed.

The epilog file has available four variables to assist in generating messages and restarting. The names of the variables and their contents is shown in the following table:

Parameter	Contents
osv\$daemon_status	The exit status of the daemon.
osv\$daemon_name	The daemon's name.
osv\$daemon_command	The command used to invoke the daemon without the parameters.
osv\$daemon_parameters	The parameters passed to the daemon.

The following commands provide equivalent behavior to the standard processing.

```
EXIT WHEN osv$daemon_status.normal

VAR
  five_minutes: time_increment = 0-0-0.0:5:0
  run_time: time_increment = $now-$job(job_submission_time)
VAREND

IF run_time > five_minutes THEN
  include_command osv$daemon_command//osv$daemon_parameters
  send_operator_message 'The '//osv$daemon_name//..
  ' daemon aborted and is now restarting.'
ELSE
  send_operator_message 'The '//osv$daemon_name//..
  ' daemon aborted. See appropriate log for details.'
IFEND
```

Incompatibilities

Code that went into NOS/VE 1.7.1 L803 requires this product match the operating system level at L803.

Object Code Management

14

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This chapter contains information about the Object Library Generator, a NOS/VE command utility designed to create, generate, and change object libraries, modules, and files. An Object Library Generator session is started by executing the `CREATE_OBJECT_LIBRARY` (CREOL) command. This utility is documented in the Object Code Management manual (60464413).

Feature Descriptions

Stack Size Parameter Added (NV08755)

The `STACK_SIZE` parameter has been added to the `ANALYZE_PROGRAM_DYNAMICS` and `CREATE_PROGRAM_PROFILE` commands.

`STACK_SIZE` or `SS` specifies the upper size limit in bytes of the run-time stack used for procedure call linkages and local variables. If `STACK_SIZE` is omitted, a 2-million byte limit is used.

Notes and Cautions

Object Code Utilities Error Message Change

OCU commands that open existing files for read access now return AM 1016 instead of OC 31 if the specified file does not exist. Affected commands are:

- `COMPARE_OBJECT_LIBRARY`
- `DISPLAY_OBJECT_LIBRARY`
- `ADD_MODULE` (`CREATE_OBJECT_LIBRARY` Subcommand)
- `COMBINE_MODULE` (`CREATE_OBJECT_LIBRARY` Subcommand)
- `CREATE_MODULE` (`CREATE_OBJECT_LIBRARY` Subcommand)
- `REPLACE_MODULE` (`CREATE_OBJECT_LIBRARY` Subcommand)
- `SATISFY_EXTERNAL_REFERENCE` (`CREATE_OBJECT_LIBRARY` Subcommand)

Affected functions are:

- `$MODULE_ATTRIBUTES` (`CREATE_OBJECT_LIBRARY` Function)
- `$MODULE_LIST` (`CREATE_OBJECT_LIBRARY` Function)

Operations

15

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CY2000 Timezone and Daylight Changes	15-1

This chapter contains information about the operation of NOS/VE.

Notes and Cautions

CY2000 Timezone and Daylight Changes

This release of NOS/VE changes the way the CYBER 2000 handles the Timezone and Daylight Saving variables. Previous to this release, these variables were saved in the MRT which resides on the Service Processor hard drive. With this release, these variables are now saved in the VCU file which also resides on the Service Processor hard disk. This change has the following effects:

- To ensure that the Timezone variable is setup correctly, the site needs to handle the Timezone as it is on other NOS/VE machines. (For example, put a SET_TIME_ZONE (SETTZ) command in the site's DC file).
- The operator no longer finds the NOS/VE screen preempted by the Service Processor or the execution of a timezone or daylight savings time command. The command performs identically to other NOS/VE machines.

If the Service Processor CIP level is not at L780D, the site should be aware of the following problems in the Service Processor:

- Time stamps in the Service Processor logs are offset by the Timezone that still resides in the Service Processor.
- The menu item Set Time/Date still contains Timezone and Daylight displays and options. These will no longer reflect the state of the NOS/VE system but rather only the state of the Service Processor.

Removable Media Management System 16

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This chapter contains information about the Removable Media Management System (RMS). The Removable Media Management System allows a site to manage a library of removable media tape volumes. This product is documented in the NOS/VE Removable Media Management System manual (60463947).

Feature Descriptions

The following features are new to the RMS released with NOS/VE 1.7.1.

Scratch Volume Support

With scratch volume support, the RMS automatically assigns mounted scratch tape volumes to jobs when the following criteria are met:

- The volume is ready on a tape drive assigned to the system that requested the volume.
- The volume is a member of the currently active removable media library (RML), is the requested density, and is either a member of the removable media group (RMG) specified on the tape request or is a member of the source pool associated with the specified removable media group.

RML Access for Reports

The RMS can convert the RML to a form compatible with COBOL and IM/QUICK to generate local reports.

Volume Slotting

Volume slotting allows the site's removable media administrator (RMA) to define multiple slots at a given location in the RML. The RMS maintains the position (slot number) of each volume at the specified location and updates the slot number as the volume moves from location to location. Procedures are provided to display the slot map for each location.

Import/Export Capability

With the import/export capability, you can extract information from an RML for subsequent use in generating/updating another RML.

Volume Disposition at Job Termination

With the REQUEST_MAGNETIC_TAPE command, you can specify the volume state in case of an abnormal job termination. You can retain the volume or relegate it to scratch status.

Volume Set Count Support

The RMS maintains the total count of volumes in the volume set. This count is stored with the first volume in the set and retrieved using current commands and functions which return volume information.

RMS Support for Blank Labeling Volumes

The NOS/VE procedures for blank labeling tape volumes now use the RMS to validate that the volume is in the scratch state. Operator notification and intervention is provided for conditions requiring operator action.

Operator Notification of Inactive RML

If the RML is inactive and a volume mount request is pending, the operator is notified. The operator has the option of continuing the request or delaying assignment until the RML is active.

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This chapter contains information pertaining to NOS/VE usage and the System Command Language. The System Command Language (SCL) is the command interface to NOS/VE.

Feature Descriptions

CREATE_TELNET_CONNECTION Command

The new CREATE_TELNET_CONNECTION command allows you to temporarily switch connections from the current NOS/VE job to a remote host. The command creates a User Telnet connection to the remote host allowing you to enter remote host commands and display remote host output. When you log out from the remote host, you return to your original job. For a description of the CREATE_TELNET_CONNECTION command, see the NOS/VE Commands and Functions manual (60464018).

New CHANGE_LOGIN_PASSWORD Parameter

This feature adds the parameter UPDATE_BATCH_JOB_PASSWORDS to the CHANGE_LOGIN_PASSWORD command in the \$SYSTEM command list entry and to the CHANGE_LOGIN_PASSWORD subcommand of the CHANGE_USER subutility of ADMINISTER_VALIDATIONS.

If the value of UPDATE_BATCH_JOB_PASSWORDS is FALSE, then the system behaves as it currently does. If the value of UPDATE_BATCH_JOB_PASSWORDS is TRUE, then the encrypted password of all queued, deferred and completed batch jobs with the same login user and login family is changed to the new encrypted password. The default for this parameter is TRUE.

Notes and Cautions

Initializing String Variables

String variables are now initialized to an empty string of the minimum length allowable by the qualified type expression. For example, variable A defined as:

```
VAR
  A: string 2..5
VAREND
```

would be initialized to the string 'ΔΔ', that is, an empty string of length 2.

Any SCL procedure that depends on uninitialized string variables may need to be modified.

DISPLAY_FILE_ATTRIBUTES Command (DISFA)

PSR NV0V364 fixes a defect in how the attributes EXPIRATION_DATE, LIFETIME and PATH are reported by the DISPLAY_FILE_ATTRIBUTES command and the corresponding function \$FILE_ATTRIBUTES. This can cause an incompatibility as shown in the following example:

```
/attach_file .ajl.admin.prolog lfn=a

/display_file_attributes $local.a do=(expiration_date lifetime path)
Expiration_Date : "unspecified value"
Lifetime       : job
Path           : :$local.a

/display_file_attributes .ajl.admin.prolog do=(expiration_date lifetime path)
Expiration_Date : infinite
Lifetime       : unlimited
Path           : :aqua.ajl.admin.prolog
```

Because the local file name is used in the first example, information for the three attributes is improperly derived from the local file name. This causes information to be returned as if the file were a temporary file. The solution to the PSR causes the same information to be returned regardless of how the file is referenced. The incompatibility can be avoided by always using the full path of the file.

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This chapter contains information pertaining to the Source Code utility (SCU), a NOS/VE command utility designed to store, organize, manipulate, and extract units of text. The Source Code utility is documented in the Source Code Management manual (60464313).

Notes and Cautions

The code for PSR SC80486 changes the way the EDIT_DECK command handles unprintable characters when DUC=FALSE is specified. Instead of converting unprintable characters to blanks, EDIT_DECK does not allow you to edit a deck containing unprintable characters, if you are running interactively, unless you specify DUC=TRUE. You will get an error message with no deck assigned to the display. If you are not running interactively, you will receive a warning message that there are unprintable characters in the deck, but they will remain intact, and you may edit the deck via a procedure or script file.

The following default variable has been added to the DUC parameter for both EDIT_DECK and EDIT_FILE:

```
ESD$EDIF_DUC
```

Also, two error messages have been added:

```
ESE$ASCII_TO_BLANKS  
ESE$DECK_CONTAINS_CONTROLS.
```

EDIT_FILE still works the same, changing unprintable characters to blanks if DUC=FALSE, and so the READ_FILE command will also change unprintable characters to blanks. However, when doing a READ_FILE within EDIT_DECK, you will receive a warning that unprintable ASCII control characters have been changed to blanks, and that action can be removed by the UNDO operation if desired.

Sort/Merge

19

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This chapter contains information pertaining to Sort/Merge, a NOS/VE utility used to sort records.

Feature Descriptions

Parameter Enhancements

The definitions of the SORT parameters are changed for this release. The SCL definitions now define the parameters so they are completely compatible with the prior usage of the parameters.

The KEY and SUM parameters had the most extensive changes. The restrictions imposed by the new definitions represent restrictions that were formerly imposed by the SORT product as it translated the parameters.

Other parameters have new definitions. For example, the from and to parameters now show the default values explicitly. Previously, those parameters were only declared as being optional. A user wishing to know the defaults had to refer to the manual instead of using the DISCI command.

The LIST_OPTIONS parameter has been expanded to better describe the options that are available. The a option was previously accepted but ignored. It is now assigned the value of all.

The RESULT_ARRAY parameter has been implemented.

The new definitions have the following advantages:

- The SCL description is more specific in displaying the options and defaults.
- The parameters are interpreted more efficiently. This performance improvement will not be observed unless there is a call to SORT that uses a complex directive file to set up a special collating sequence.
- In the case where a procedure defines a key parameter for a sort, an error in the key might be diagnosed by SCL on the procedure call instead of waiting for SORT to diagnose the parameter error after several other procedure steps had been executed.

The following list was produced by DISCI SORT DO=(AN, PD)

```
Names:  sort
Source: $system
Parameters:
from, f: list 1..100 of file = $local.old
to, t: file = $local.new
key, k: list 1..106 of any of
        record
        key_range: range of integer 1..65535
        key_type: name = $optional
        sort_order: key
                a, d
```

```

    keyend = $optional
  recend
  record
    key_first_byte: integer 1..65535
    key_length: integer 1..65535
    key_type: name = $optional
    sort_order: key
      a, d
    keyend = $optional
  recend
  anyend = $optional
  directives, dir, directives_file, df: list 1..100 of file = $optional
  list, l: file = $LIST
  list_options, lo: list of key
    (all, a)
    (source, s)
    (detailed_exception, de)
    (merge_statistics, ms)
    (record_statistics, rs)
    (none, off, no, false)
  keyend = source
  error, e: file = $ERRORS
  error_level, el: key
    f, t, i, w, c, none, trivial, warning, fatal, catastrophic
    informational
  keyend = WARNING
  reserved_position_9: boolean = $optional
  estimated_number_records, enr: range of integer = $optional
  exception_records_file, erf: file = $optional
  c170_compatible, cc: boolean = FALSE
  omit_duplicates, od: boolean = FALSE
  owncode_fixed_length, ownfl, ofl: integer 1..65535 = $optional
  owncode_maximum_record_length, ownmrl, omrl: integer 1..65535 = ..
  $optional
  owncode_procedure_1, op1, own1: name = $optional
  owncode_procedure_2, op2, own2: name = $optional
  owncode_procedure_3, op3, own3: name = $optional
  owncode_procedure_4, op4, own4: name = $optional
  owncode_procedure_5, op5, own5: name = $optional
  retain_original_order, retain, roo, ret: boolean = FALSE
  collating_sequence_name, csn, seqn: name = $optional
  collating_sequence_step, css, seqs: list 1..255 of range of ..
    string 1 = $optional
  collating_sequence_remainder, csr, seqr: boolean = $optional
  collating_sequence_alter, csa, seqa: boolean = $optional
  reserved_position_26: boolean = $optional
  sum, s: list 1..100 of any of
    record
      sum_range: range of integer
      sum_type: key
        numeric_fs, numeric_lo, numeric_ls, numeric_ns, numeric_to
        numeric_ts, real, binary, binary_bits, integer, integer_bits
        packed, packed_ns
      keyend = $optional
      repeat: integer 1..100 = $optional
    recend

```

```

record
  sum_first_byte: integer
  sum_length: integer = $optional
  sum_type: key
    numeric_fs, numeric_lo, numeric_ls, numeric_ns, numeric_to
    numeric_ts, real, binary, binary_bits, integer, integer_bits
    packed, packed_ns
  keyend = $optional
  repeat: integer 1..100 = $optional
recend
anyend = $optional
zero_length_records, zero_length_record, zlr: key
  (pad, p)
  (delete, d)
  (last, l)
keyend = DELETE
verify_merge_input_order, verify, vmio, ver: boolean = FALSE
load_collating_table, lct: list 1..2 of name = $optional
result_array, ra, resa: name = $optional
status: (VAR, BY_NAME) status = $optional

```

Notes and Cautions

In some cases, the diagnostics issued by SCL are not as meaningful to the sort user as the corresponding diagnostics that were issued by SORT.

In cases where users have copied the old parameter definitions into procedure definitions, the parameter definitions will probably have to be changed in the procedures. For example, the following procedure passes the KEY parameter defined to match the old SORT command's KEY parameter. This procedure will fail if it calls the new SORT command.

```

PROCEDURE sort_lines (
  key, k: list 1..106 of list 1..4 of range of any = $optional
  status)

  VAR
    scr1: file = $fname($unique)
  VAREND

  sort from=scr1 to=scr1 e=$null k=keys

PROCEND sort_lines

```


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This chapter describes new features in NOS/VE system performance and maintenance. For more information, see the NOS/VE System Performance and Maintenance, Volume 1 (60463915) and NOS/VE System Performance and Maintenance, Volume 2 (60463925) manuals.

Feature Descriptions

Unrecovered Read Error Includes Path Name

If NOS/VE encounters a media defect when reading a file or segment, NOS/VE now logs the path name of the unrecovered read error in both the job log and system log. As in previous releases, NOS/VE also creates a software flaw for the defect.

Although a software flaw prohibits *future* use of a defective area, the unrecovered read error continues to occur for each access attempt of the current object, until the file or segment is deleted and optionally restored.

To view unrecovered read errors, enter the following commands:

```
/sou
sou/display_system_log all o=file
sou/edit_file file
ef/locate_all '**UNRECOVERED READ ERROR'
ef/quit
sou/quit
```

An unrecovered read error message includes the name and address of the object (file or segment) it tried to read. The message text has the following format (the lowercase characters represent values the system supplies):

****UNRECOVERED READ ERROR - type of object PVA= process virtual address**

There are two categories of *type of object*: temporary and permanent.

If an unrecovered read error occurs for a temporary file or segment, the file or segment is deleted at either task or job termination, and site personnel needn't worry about them. The temporary types of objects are as follows (*italic* type represents values the system supplies):

- File :\$LOCAL.name
- File ** Temporary File Path Not Found **
- Job Data Segment
- Job Log
- Job Stack Segment
- Job Transient Segment
- Task Data Segment

If an unrecovered read error occurs for a permanent file or permanent segment, however, site personnel may want to delete and restore the affected file or segment. The permanent types of objects are as follows (*italic* type represents values the system supplies):

- Device File
- File *path to permanent file*
- Shared Transient Segment
- System Binding Segment
- System Code Segment
- System Data Segment
- System Literals Segment
- System Log
- System Account Log
- System Engineering Log
- System Job History Log
- System Security Log
- System Statistic Log
- File ** Permanent File Path Not Found **

The recommended process to delete and restore a permanent type of object varies with the object:

- Device File

Back up all files on the volume with the media defect. The volume is identified in the engineering log; look for the engineering log entry that has the same date and time as the system log entry.

Initialize the volume using the directions in the NOS/VE System Performance and Maintenance manual, volume 2.
- File *path to permanent file*

Delete the file and restore it from a backup.
- Shared Transient Segment, System Data Segment, or System Literals Segment

Initiate a continuation deadstart. The segments are deleted and reallocated.
- System Binding Segment or System Code Segment

Initiate a continuation deadstart from tape at your convenience; the deadstart must pause for operator input. Enter the following system core command:

```
set_system_attribute delete_old_templates 1
```

The current disk image of the system is released and then recreated from the deadstart tape.
- System Log, System Account Log, System Engineering Log, System Job History Log, System Security Log, or System Statistic Log

Terminate the log. All of the log space is deleted, except for the log's first 16 kilobytes.
- File ** Permanent File Path Not Found **

The path name of the file cannot be identified for the segment. This error can occur when a system utility encounters an unrecovered read error.

When either the BACKUP_PERMANENT_FILES system utility or the MOVE_CLASSES command encounters an unrecovered read error, this message is returned followed by an error message that specifies the name of the permanent file. Both messages are for the same error and give the same Process Virtual Address; consider the messages as one.

MOVE_CLASSES Command

The new command `MOVE_CLASSES` allows an analyst to move files and catalogs among disk volumes. This command is especially helpful in three situations:

- When the logging of disk faults for a volume appears abnormally high, you can use the `MOVE_CLASSES` command to move the files and catalogs
- After a disk is repaired, you can use the command to return files and catalogs to their original residence.
- When you add a new disk to a set, you can use the command to move files and catalogs from full disk volumes in the set to the new disk volume.

The `MOVE_CLASSES` command is described in the Commands and Functions manual (60464018).

UPDATE_PERM_FILE_SPACE_LIMIT Command

This feature introduces the `UPDATE_PERM_FILE_SPACE_LIMIT` command. This command calculates the amount of file and catalog space assigned to a user and updates the accumulator field of the permanent file space limit field in the user record in the validation file. It is a hidden command that can only be called by a system or family administrator. Sites should put this command in the `SYSTEM_EPILOG` so that the accumulator value is updated whenever a user logs out. For more information on this command, refer to the NOS/VE Commands and Functions manual (60464018).

Dynamic Reloading of Hung PPs

The system dynamically reloads the following on hung PPs:

- The system PP program that interfaces between the NOS/VE operating system and the system console (SCI).
- The NOS/VE disk drivers
- The communication drivers: `NETW`, `ICAD`, `IVB0`, and `IVB4`

The system reloads SCI or a disk driver only into the PP that hangs; the system reloads a communication driver, however, into any available PP. If a hung PP cannot be reloaded, the operator is notified or the system is stepped.

When the system dynamically reloads a PP, it logs a statistic. If you do not want the system to dynamically reload hung PPs, you can disable this feature.

Each time a PP is hung and dynamically reloaded, the system records the CM1010 statistic in the engineering log. The statistic records the failure data associated with the hung PP. The descriptive data field has the following format:

```
mainframe.IOUm.cCHnn(8).cPPnn(8) HUNG - RELOAD OF PP (driver) INITIATED.
```

Field	Description
mainframe	System name of the mainframe in the form \$SYSTEM_mmmmm_ssss, where mmmmm is the model number of CPU0 and ssss is the serial number of CPU0.
m	IOU number; either 0 or 1.
c	Optional character. The character C indicates a concurrent channel. If the character is missing, indicates an NIO channel.
nn	Channel number associated with the hung PP when the integer follows the CH characters; hardware logical PP number when the integer follows the PP characters.
driver	Name of the driver in the hung PP.

The following counter is defined for this statistic:

Counter	Description								
1	The state of the driver:								
	<table> <tr> <th>Integer</th><th>Description</th></tr> <tr> <td>0</td><td>The driver state is unknown.</td></tr> <tr> <td>1</td><td>The driver is hung; the P register is not changing.</td></tr> <tr> <td>2</td><td>The driver state is lost; the P register is changing.</td></tr> </table>	Integer	Description	0	The driver state is unknown.	1	The driver is hung; the P register is not changing.	2	The driver state is lost; the P register is changing.
Integer	Description								
0	The driver state is unknown.								
1	The driver is hung; the P register is not changing.								
2	The driver state is lost; the P register is changing.								
2	Contents of the P register.								
3	Contents of the K register.								
4	Contents of the Q register.								
5	Contents of the A register.								
6	Contents of the R register.								

Dynamic reloading of hung PPs can be disabled. The system automatically disables dynamic reloading of hung PPs if you reconfigure the PPs. The system also disables dynamic reloading if the same PP fails three times during an hour. You can also disable the dynamic reloading of hung PPs by specifying 0 for the AUTOMATIC_PP_RELOAD system attribute; the default is 1. If a PP repeatedly hangs, you might want to disable dynamic reloading so that the next time the PP hangs you can take a full system dump and analyze the condition.

Generic Queue Support

This feature allows a user with the `SYSTEM_OPERATION` capability to copy files in the generic application queue to a local or permanent file. This is accomplished by using the new `COPY_QUEUE_FILE` subcommand of the `MANAGE_QUEUE_FILES` utility. Applications, including `MAIL/VE`, use the generic application queue.

PF Condition Handling

In earlier versions of `NOS/VE`, when a permanent file task encountered certain unrecoverable errors, the task would abort and could possibly leave a catalog segment locked. This could result in a hung system requiring a deadstart. This feature adds condition handlers to all permanent file interfaces that open and lock catalog segments. When invoked, the condition handlers unlock any locked catalog segments, clean up all system tables, and return abnormal status to the caller. The task does not abort.

Site Defined Shared Queues

This feature allows a site to create up to 25 additional paging queues for shared files. When a permanent file that is assigned to a site shared queue is opened by at least two jobs, the pages assigned to the file are managed independently of pages assigned to the system shared queue or other site shared queues. Since the attributes of each shared queue can be set independently, the paging service for jobs that share files assigned to site shared queues can be regulated.

A `SHARED_QUEUE` parameter (abbreviated `SQ`) of type `KEYWORD` has been added to several commands. Values of `SITE_01`, `SITE_02`, `SITE_03`, up to `SITE_25` are allowed.

The following commands and functions have been enhanced to support shared queues:

- A `SHARED_QUEUE` parameter has been added to the `REQUEST_MASS_STORAGE` command.
- A `SHARED_QUEUE` parameter has been added to the `RESTORE_PERMANENT_FILES SET_RESTORE_OPTIONS` subcommand. This allows a set of files to be restored to a site shared queue.
- A `DISPLAY_RESTORE_OPTIONS` subcommand has been added to the `RESTORE_PERMANENT_FILES` utility to display the current values of the restore options that can be changed by the `SET_RESTORE_OPTIONS` subcommand.
- A `SHARED_QUEUE` keyword value has been added to the `DISPLAY_OPTIONS` parameter of the `DISPLAY_FILE_ATTRIBUTES` command.
- A `SHARED_QUEUE` keyword value has been added to the `$FILE_ATTRIBUTES` function.
- An `AMC$SHARED_QUEUE` selector has been added to the variant record `AMT$GET_ATTRIBUTES` which is returned by `AMP$GET_FILE_ATTRIBUTES`. The value returned for `AMC$SHARED_QUEUE` is of type `OST$NAME`.

- The value for `SHARED_QUEUE` that is returned by the `DISPLAY_FILE_ATTRIBUTES` command, the `$FILE_ATTRIBUTES` function and the `AMP$GET_FILE_ATTRIBUTES` program interface is determined as follows:
 - For all temporary files and permanent tape files, a value of 'unspecified' is returned by `DISPLAY_FILE_ATTRIBUTES` and `$FILE_ATTRIBUTES` and a value of `OSC$NULL_NAME` is returned by `AMP$GET_FILE_ATTRIBUTES`
 - For permanent mass storage files for which a shared queue was not specified, the keyword `SYSTEM` is returned.
 - For permanent mass storage files for which a shared queue was specified that are not attached, the specified value of `SITE_01` through `SITE_25` is returned.
 - For permanent mass storage files for which a shared queue was specified that are attached with `SHARE_MODE <> NONE`, the keyword value `SITE_01` through `SITE_25` is returned; otherwise the keyword value `SYSTEM` is returned.
- The system attribute `SITE_ACTIVE_SHARED_QUEUES` has been added so that the number of active site shared queues can be specified with the `SET_SYSTEM_ATTRIBUTE` command. Values of 0 thru 25 can be specified. A `SET_SYSTEM_ATTRIBUTE` command must be added to the DCFILE to specify the number of active site shared queues because the number of active shared queues is not preserved by deadstart recovery. If the number of active shared queues is not specified in the DCFILE by a `SET_SYSTEM_ATTRIBUTE`, the shared queue of files attached by active jobs will change from a site shared queue to the system shared queue during job recovery.
- If the number of active site shared queues is not specified by the `SITE_ACTIVE_SHARED_QUEUES` system attribute, no site shared queues are activated. The number of active site shared queues can be changed by the `SITE_ACTIVE_SHARED_QUEUES` system attribute at any time.
- The keywords `SITE_01` through `SITE_25` have been added to the list of queue names that can be specified for the `QUEUE` parameter of the `CHANGE_SHARED_QUEUE_ATTRIBUTE` command. This allows the queue attributes of the site shared queues to be changed.
- The `DISPLAY_SHARED_QUEUE_ATTRIBUTE` (abbreviated `DISSQA`) subcommand of the `MANAGE_MEMORY` utility has been changed to allow the queue attributes of the site shared queues to be included by specifying a value of `ACTIVE_SITE_DEFINED` or `ALL` or to be excluded by specifying a value of `SYSTEM` for the `QUEUE` parameter.
- The `SET_TO_DEFAULT` (abbreviated `SETTD`) subcommand of the `MANAGE_MEMORY` utility has been changed to allow the site shared queues to be specified for the `SET` parameter.
- Paging statistics for active site shared queues are displayed by the `DISPLAY_SYSTEM_DATA` command when the `JM_MM_STATISTICS` keyword is included in the `DISPLAY_OPTION` parameter. In addition, the capitalization of names that are displayed for each of the queues has been changed to be consistent with the convention used for other displays.
- The `OS0` (Job Memory Interval) statistic now includes counters for the active site shared queues. Counter 19 contains the number of pages in shared queue `SITE_01`, counter 20 contains the number of pages in shared queue `SITE_02` etc.

- A shared queue record (PFT\$SHARED_QUEUE_INFO) has been added to the PFT\$CYCLE_ARRAY_VERSION_2 record which is a parameter to the PFP\$FIND_CYCLE_ARRAY_VERSION_2 and PFP\$FIND_CYCLE_ENTRY_VERSION_2 subsystem interfaces that reside on \$SYSTEM.CYBIL.OSF\$SUBSYSTEM_INTERFACE. If these types are used as parameters that are passed between procedures, parameter verification errors will be detected if both the called and calling module have not been recompiled and source code parameter verification is used. Calls to PFP\$FIND_CYCLE_ARRAY_VERSION_2 and PFP\$FIND_CYCLE_ENTRY_VERSION_2 will not cause parameter verification because the changes are upward compatible when object code parameter verification is used.
- A shared queue item has been added to the information written to the listing by the RESTORE_PERMANENT_FILES subcommand DISPLAY_BACKUP_FILE (DISBF) when the DISPLAY_OPTION of CATALOG_INFORMATION (DO=CI) is specified on the subcommand.
- The format of the information written to the listing by the RESTORE_PERMANENT_FILES subcommand SET_RESTORE_OPTIONS (SETRO) has been changed.
- Interface changes in the File Server require the same level of the NOS/VE operating system be run on all client and server mainframes.
- The same number of site shared queues should be activated on the server and all client mainframes to ensure that pages for files assigned to a site shared queue are assigned to the correct queue on all mainframes.

512 Megabytes of Memory

NOS/VE supports 512 megabytes of memory on CYBER models 970 and 972 that are configured with central memory model number 35(16). The NOS/VE System Performance and Maintenance manuals, volumes 1 (60463915) and 2 (60463925), and the NOS/VE Operations manual (60463914) specify directions and exceptions for specific mainframe models. Directions and exceptions that apply to the CYBER model 960 also apply to model 970; directions and exceptions that apply to the CYBER model 962 also apply to model 972.

Dual-State Systems

Dual-state systems can execute on only CYBER model 970 with central memory model number 35(16).

When a mainframe has more than 256 megabytes of memory, there is a change in the process for executing an abnormal termination of NOS/VE. Follow the directions in chapter 5 of the NOS/VE Operations manual, publication number 60463914.

Dual-State Memory Assignment

In a dual-state system, the maximum amount of memory you can assign to NOS or NOS/BE has not changed. You can, however, increase the amount of memory you assign to NOS/VE.

Mass Storage Class P

With this release of NOS/VE, product files that are not system critical are installed to mass storage class P instead of mass storage class M. At least one volume in the system set must be assigned to class P. Class P is not required in other sets. Since files of products are more frequently used, you can assign class P to several volumes in the system set to avoid disk access bottlenecks. Having product files go to class P allows you to separate them from volumes with user permanent files and also allows you to control the residence of your frequently used products for performance tuning. Moving product files to class P ensures \$SYSTEM files assigned to class M will not be backed up when sites backup user permanent files by volume.

New System Attributes

The following new system attributes can be set using the SET_SYSTEM_ATTRIBUTE command:

TEMP_FILE_SPACE_GUARD

This attribute allows the site to specify whether the system limits the amount of space allocated by the system on behalf of the user or application.

DELETE_OLD_TEMPLATES

This attribute allows the site to specify whether the system deletes the current disk image of the system and recreates it from the deadstart tape.

These new attributes are documented in the System Performance and Maintenance manual, Volume 1.

X Client Job Class

Procedure CREATE_SCHEDULING_CLASS now creates an X_CLIENT job class, service class and application class. Xterm users can now use the X_CLIENT job class to give better performance for xterm jobs. The site can alter the X_CLIENT service class to meet their needs. Users can specify the X_CLIENT job class for xterm. The variable XWV\$XTERM_JOB_CLASS specifies the job class. If the variable is not defined, xterm uses the interactive job class. If the variable is defined, xterm uses the job class contained in the variable. The following example shows statements that can be added to a user's prolog:

```
VAR
  XWV$XTERM_JOB_CLASS: (JOB) name = x_client
VAREND
```


Notes and Cautions

MOVE_CLASSES Feature

The MOVE_CLASSES feature that was introduced in BCU L780AC has a number of problems that are documented by PSRs NV09688, NV09739, NV09740, NV09741, and NV09783.

Due to the severity of these problems, the use of the MOVE_CLASSES feature at L780 BCUs or at the L803 release is not recommended until the problems are corrected.

Corrections for these and other MOVE_CLASSES problems is planned for a future L803 BCU. At that time, an Installation Bulletin will be issued and an item will be included in the BCU addendum to inform you that MOVE_CLASSES is available and is working correctly.

Mass Storage Class P

System analysts and users should know that the \$SYSTEM files are in class P if they ever wish to move these files to a different user with the BACKUP_PERMANENT_FILE and RESTORE_PERMANENT_FILE utilities. If the user is not a system administrator, the following warning message is issued when the user attempts to restore the file:

```
--WARNING PU 615-- File {file name} could not be restored with the same mass
storage attributes that it had when it was backed up.
```

However, the file does get restored. If the user is a system administrator, the file is restored to class P. System administrators must be careful to restore the files to a set that has class P defined. If no class P is defined on a set, the restore command waits until a class P device becomes available. A solution for this problem is to execute the SET_RESTORE_OPTIONS command before the restore commands:

```
SET_RESTORE_OPTIONS FILE_CLASS=M
```

This forces the restore of the files to a device of file class M.

With the exception of IM/BASISplus products, all non-system critical products updated to NOS/VE 1.7.1 L803 are installed to class P. IM/BASISplus products install to class M because they install to the DMROOT catalog as opposed to the \$SYSTEM catalog.

See Appendix D for a list of products that have been updated at L803.

If there are other products on the system that have not been updated for L803, the files belonging to that product will still be on a class M device. If you want to move the files to a device with class P, you can do the following at the system console under the SYSTEM_OPERATOR_UTILITY:

```
TASK R=3
BACKUP_PERMANENT_FILES BF=$system.bf L=$system.backup_list
BACKUP_CATALOG C={catalog of product}
QUIT

DELETE_CATALOG C={catalog of product} DO=catalog_and_contents

RESTORE_PERMANENT_FILES L=$system.restore_list
```

```
SET_RESTORE_OPTIONS FILE_CLASS=P
RESTORE_CATALOG C={catalog of product} BF=$system.bf
QUIT
DELETE_FILE $system.bf
TASKEND
```

The REQUEST_MASS_STORAGE command is changed so that if you specify a file class of *product*, the file is assigned to class P.

FSP\$OPEN_FILE Wait Condition

Prior to NOS/VE release 1.6.1 at level 780, FSP\$OPEN_FILE did not wait for a cycle busy condition in the system job. At PSR level 780AC, NOS/VE was changed to wait for the cycle busy condition in the system job. This allows the Removable Media Management System (RMS) to function properly from the system job.

AIO_LIMIT System Attribute

The system attribute AIO_LIMIT is now a service class attribute. It can be set and changed using subcommands of the ADMINISTER_SCHEDULING and MANAGE_ACTIVE_SCHEDULING utilities. The default value of AIO_LIMIT is 60000.

MAXIMUM_TASKS Attribute Support Dropped

Support for the system attribute MAXIMUM_TASKS is dropped with this release.

MAXIMUM_WORKING_SET Change

In previous releases, the MAXIMUM_WORKING_SET for a scheduled application was constrained to the maximum value of MAXIMUM_WORKING_SET for the job class. For example, if the MAXIMUM_WORKING_SET for an application was defined to be 4000, and the job class values were (1000, 20, 2000), the application would have its MAXIMUM_WORKING_SET assigned to 2000. This has been changed to work as originally intended. The application is now assigned a MAXIMUM_WORKING_SET of 4000.

PORTMAP_PCNFS Abbreviation

The job and service classes with the PORTMAP_PCNFS name now have the abbreviation of PP.

Job Statistics Changes

Several changes have been made to system statistics in this release.

The SYSTEM_FILE_NAME has been added to the AV28, AV29, and AV30 statistics. The name of the application that acquires and processes an output file has been added to the JM9 and JM12 job history statistics. The application name has also been added to the output produced by the DISPLAY_OUTPUT_HISTORY and DISPLAY_JOB_HISTORY commands.

System Attributes Default Change

The default value for the `MAXIMUM_JOB_CLASSES` and the `MAXIMUM_SERVICE_CLASSES` system attributes has been changed from 10 to 15.

Future Considerations

Improve Performance of Disaster Recovery

This feature will be provided in a future release.

This feature changes `NOS/VE` as follows:

- The `DELETE_UNRECONCILED_FILES` and `RELEASE_MASS_STORAGE` parameters of the `CHANGE_CATALOG_CONTENTS` (CHACC) command will be removed. A new utility (called `MANAGE_EXCEPTION_POLICIES`) will be provided to allow the site to control how `NOS/VE` handles exception conditions such as `VOLUME_UNAVAILABLE` and `MEDIA_MISSING`. `CHANGE_CATALOG_CONTENTS` still provides the necessary capabilities to delete missing objects and release missing disk images but the means of selecting these capabilities has changed.
- In R1.6.1 and previous releases, if a disk failed while a file was being accessed, the job accessing the file would wait. Neither the application program nor the site had any control over this. This condition will be changed as follows:
 - If the application program omits the `FSC$VOLUME_UNAVAILABLE` condition from the set of `ALLOWED_EXCEPTIONS.ACCESS_CONDITIONS` explicitly specified for the `FILE_ATTACHMENT` parameter of `FSP$OPEN_FILE` and this condition occurs after the file is opened, then:

For record access, `PFE$VOLUME_UNAVAILABLE` status will be returned to the program.

For segment access, an `OSC$VOLUME_UNAVAILABLE_COND` user-defined condition is raised before the system takes further action. If the application has a handler for the condition, it can perform a non-local exit from the procedure accessing the segment. If this is not done, `NOS/VE` will do a `PMP$ABORT`. During this abort, task end handlers established by the program will get control. It is recommended that these handlers not touch the unavailable segment.
 - If the application program 1) explicitly includes the `FSC$VOLUME_UNAVAILABLE` condition in the set of `ALLOWED_EXCEPTIONS.ACCESS_CONDITIONS` of the `FILE_ATTACHMENT` parameter of `FSP$OPEN_FILE`, or 2) omits the specification of `ALLOWED_EXCEPTIONS`, and the `FSC$VOLUME_UNAVAILABLE` condition occurs after the file is opened, then:

The default policy of `NOS/VE` is to wait for this condition. However, the site can change the default policy using `MANAGE_EXCEPTION_POLICIES`. Therefore, the application program can get abnormal status back or be terminated in situations where it previously would have waited.
 - The conditions `FSC$FILE_SERVER_INACTIVE` and `FSC$SPACE_UNAVAILABLE` were handled by `NOS/VE` in the same manner as `FSC$VOLUME_UNAVAILABLE`. If you choose not to wait for these conditions or if the site chooses not to wait for them, the `DFE$FILE_SERVER_INACTIVE` and `AME$SPACE_UNAVAILABLE` conditions are returned, respectively.

- In R1.5.3, the default policy for handling the PFE\$CYCLE_BUSY (FSC\$CYCLE_BUSY) condition was to wait in a batch job and to return the PFE\$CYCLE_BUSY status in an interactive job or in the System Job.
In R1.6.1 L780, NOS/VE was changed to wait for the PFE\$CYCLE_BUSY condition in the System Job.
While the default policy remains the same, the site can change the default policy using `MANAGE_EXCEPTION_POLICIES`. If you do not want to wait for this condition, it is strongly recommended that you explicitly specify the `ALLOWED_EXCEPTIONS` record of the `FILE_ATTACHMENT` parameter of `FSP$OPEN_FILE` and omit `FSC$CYCLE_BUSY` from the `ACCESS_CONDITIONS` field. If you decide to wait for this condition, the site can deny the wait and abnormal status may be returned.
- In previous releases, NOS/VE's default policy for handling the PFE\$CYCLE_DATA_RESIDES_OFFLINE (FSC\$DATA_RETRIEVAL_REQUIRED) condition was to wait for the retrieval of the file.
While NOS/VE's default policy remains the same, the site can change the default policy using `MANAGE_EXCEPTION_POLICIES`. If you do not want to wait for this condition, it is strongly recommended that you explicitly specify the `ALLOWED_EXCEPTIONS` record of the `FILE_ATTACHMENT` parameter of `FSP$OPEN_FILE` and omit `FSC$DATA_RETRIEVAL_REQUIRED` from the `ACCESS_CONDITIONS` field. If you decide to wait for this condition, the site can deny the wait and abnormal status may be returned.
- In previous releases, NOS/VE's default policy for handling the PFE\$UNDEFINED_DATA was to return the abnormal status.
NOS/VE's default policy will now be to wait for this condition. This condition signals the need to restore the file. In general, sites want jobs to wait for this condition so that they can return to production while restoring files.
However, the site controls this default policy using `MANAGE_EXCEPTION_POLICIES`. If you do not want to wait for this condition, it is strongly recommended that you explicitly specify the `ALLOWED_EXCEPTIONS` record of the `FILE_ATTACHMENT` parameter of `FSP$OPEN_FILE` and omit `FSC$DATA_RESTORATION_REQUIRED` from the `ACCESS_CONDITIONS` field. If you decide to wait for this condition, the site can deny the wait and abnormal status may be returned.
- In previous releases, NOS/VE's default policy for handling the PFE\$CATALOG_VOLUME_NOT_ONLINE, PFE\$CATALOG_VOLUME_UNAVAILABLE, and PFE\$MEDIA_MISSING conditions was to wait for the reinstatement of the volume.
While NOS/VE's default policy remains the same, the site can change the default policy using `MANAGE_EXCEPTION_POLICIES`. If you do not want to wait for these conditions, it is strongly recommended that you explicitly specify the `ALLOWED_EXCEPTIONS` record of the `FILE_ATTACHMENT` parameter of `FSP$OPEN_FILE` and omit `FSC$CATALOG_MEDIA_MISSING`, `FSC$CATALOG_VOLUME_UNAVAILABLE`, and `FSC$MEDIA_MISSING` from the `ACCESS_CONDITIONS` field. If you decide to wait for these conditions, the site can deny the wait and abnormal status may be returned.

Allow File Rewrite when its Volume is Lost

When it is certain that the file is being completely rewritten, this feature:

- Deletes the data of a file if it resides on an unavailable volume. This allows the file to be rewritten rather than have the program wait for the file to become available.
- Inhibits the unnecessary retrieval of a released file. If the file is retrieved, the disk image would immediately be invalidated by the rewrite; therefore, the retrieval serves no purpose.
- Inhibits returning abnormal status if the file is in a PFE\$UNDEFINED_DATA condition. A file in this condition would normally require restoration but this is unnecessary if it is being completely rewritten anyway.

NOS/VE considers it certain that the file is being rewritten in the following situations:

- The cycle has never been opened.
- The file is a sequential file, the open position is \$BOI, the file is accessed via record access, the access modes include SHORTEN and exclude READ and EXECUTE access, the file is not attached to another job, and there are no other instances of open of the file within the job.
- The DELETE_DATA option of the FILE_ATTACHMENT parameter of FSP\$OPEN_FILE was set to TRUE, the open position is \$BOI, the access modes include SHORTEN, the file is not attached to another job, and there are no other instances of open of the file within the job.

A program that intends to rewrite a file that is accessed via segment access or whose access modes include read or execute is advised to explicitly set DELETE_DATA to TRUE when opening the file. This ensures that the system operates efficiently in the presence of the three conditions mentioned above.

CHANGE_CATALOG_CONTENTS Command (CHACC)

The DELETE_UNRECONCILED_FILES, INCLUDE_VOLUMES, and RELEASE_MASS_STORAGE parameters of this command will be removed.

The features provided by these parameters in the past will be retained and expanded. Instead of these three parameters, the CHANGE_CATALOG_CONTENTS command will be directed by site-defined exception condition policies defined within the new MANAGE_EXCEPTION_POLICIES utility.

The listing written to the OUTPUT file of the command will be compatible except for:

- If the file was busy while attempting to delete a damage condition, a new line is reported. For example:

```
Busy Cycle - Damage Condition(s) Remain Set (1)      :aqua.ajl.dft.1
```

- If you are attempting to delete an unreconciled file or release the mass storage image of the file and it is busy, two lines are now written rather than one. For example:

Deleted Cycle with VOLUME_UNAVAILABLE	:aqua.ajl.dft.1
Busy Cycle - Delete Pending (3)	:aqua.ajl.dft.1
Retrieval Enabled - VOLUME_UNAVAILABLE	:aqua.ajl.dft.1
Busy Cycle - Release Pending (3)	:aqua.ajl.dft.1

- The SUMMARY portion of the listing will be completely revised to report more statistical information about the file base and to summarize the additional actions that are now performed by CHANGE_CATALOG_CONTENTS.

In addition, the following new features will be provided:

- A significant performance improvement in both elapsed time and job time.
- Processing of the exception condition PFE\$UNDEFINED_DATA is added. This condition is present when a file's catalog is restored but the data has not yet been restored. Support for this condition in CHANGE_CATALOG_CONTENTS allows you to delete or retrieve files that are in this condition after you are certain that all backup tapes have been restored.
- Improved support of Archive/VE. Through the use of the MANAGE_EXCEPTION_POLICIES utility you may direct CHANGE_CATALOG_CONTENTS to only release files that have not been modified since their duplication, or to only release files that have been modified since their duplication. Previously, the RELEASE_MASS_STORAGE parameter released all duplicated, unreconciled files regardless of their condition.
- The ability to discard the mass storage image of a file while it is in use. The actual release of the mass storage image will occur when the file is detached by those who are using it but CHANGE_CATALOG_CONTENTS marks the catalog entry to enable the release at the last detach. Previously, busy unreconciled files were skipped but reported.
- The ability to delete a file while it is in use. The actual deletion of the file will occur when the file is detached by those who are using it but CHANGE_CATALOG_CONTENTS marks the catalog entry to enable the deletion at the last detach. Previously, busy unreconciled files were skipped and not reported.
- The ability to retrieve all files whose mass storage image CHANGE_CATALOG_CONTENTS has released. Two options are provided. You can request that the retrieval be automatically performed at the completion of the command or you may obtain a list of files to be retrieved so that you may implement the retrieval at a later time.

Terminal and Screen Management 21

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User Control of Menu Rows	21-1

This chapter contains information about interactive terminal use, Screen Formatting, and the Terminal Definition Utility. Screen Formatting permits programmers to define and interact with forms for screen applications. The Terminal Definition Utility is used to describe a terminal's hardware attributes so that it can be used for full screen applications.

Notes and Cautions

User Control of Menu Rows

The File Manager no longer internally sets the number of menu rows at startup. With this release, the user can set the number of menu rows within the File Manager prolog file. The default is to display one row of function keys at startup.

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Notes and Cautions

Password Encryption

In release 1.6.1 L780AB, a new password encryption algorithm was introduced in module `AVM$ENCRYPT_PASSWORD` in response to PSR NV08954. The module contained both the old encryption algorithm (pre-L780AB) and the new algorithm. PSR NV08954 fixed a problem in the encryption algorithm that allowed multiple login passwords to map to the same encrypted value. For this reason, it was necessary to reencrypt all login passwords using the new encryption algorithm.

The L780AB BCU addendum proposed a process for reencrypting passwords. As a result of customer feedback (see PSR NV09619), Control Data decided to make the reencryption more automatic for those who installed L780AD or upgrade to NOS/VE 1.7.1 L803.

This chapter of the SRB describes the general problem in migrating from pre-L780AB to 1.7.1 L803 and beyond, and the recommended solution to the problem.

PROBLEM

At L803AA and beyond, the `AVM$ENCRYPT_PASSWORD` module contains only the new password encryption algorithm.

Your site will have a problem with passwords if you do either of the following:

- Upgrade from a system prior to L780AB to a L803AA or later system.
- Install 1.7.1 L803 and some of your users do not login.

SOLUTION

Control Data recommends option 1 from the following list of options for dealing with this problem:

1. Install 1.7.1 L803 and have all users log in to the system. The system automatically causes the user's login password to get reencrypted using the new algorithm. There would be no impact when going to L803AA (or later).
2. If your site is at L780AB or L780AC, have all users change their login password. This will cause their password to be reencrypted with the new algorithm and is saved in the validation file. There would be no impact then when going to L803AA (or later).
3. Issue all of your users new passwords when you upgrade to L803AA (or later).
4. Install the module `AVM$ENCRYPT_PASSWORD` from L780AB, L780AC, L780AD or L803 onto L803AA (or later) system. When all users have had sufficient time to login, for added security, reinstall the L803AA version of `AVM$ENCRYPT_PASSWORD`.

If you have further questions concerning the impact of the new password encryption algorithm introduced at L780AB, please contact CYBER Software Support.

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Archived File Support	23-3

This chapter contains information about VX/VE, the NOS/VE layered implementation of UNIX.

Feature Descriptions

Archived File Support

VX/VE and C/VE now support access to files archived by Archive/VE. This change is transparent to all users of VX/VE and C/VE.

C/VE Interface Expands NOS/VE File References

A new interface, *fullpath*, has been added to C/VE. This interface provides complete expansion of NOS/VE file reference constructs such as \$user, \$wc, and \$up. The existing *expandpath* interface, which has not been changed, has severe limitations on several file reference constructs.

The synopsis of the *fullpath* interface is:

```
char *fullpath(path)
char *path
```

A NULL pointer is returned if *fullpath* encounters an error.

Command Name Available in C/VE Programs

C/VE programs now access the name of the command in *argv[0]*. In previous versions, the hyphen (-) was found in *argv[0]*. The exact content of *argv[0]* depends on the method used to initiate the C/VE program.

The follow examples show the results of executing the sample program several ways.

Sample program:

```
#include <stdio.h>

main(argc,argv)
int argc;
char *argv[];
{
    int i;
    for (i=0; i<argc; i++)
        printf("argv[%d] = \"%s\"\n", i, argv[i]);
    return(0);
}
```

Example 1:

If the program is executed by naming the file containing the binary, *argv[0]* will contain the name of the file as entered:

```
/$wc.main
argv[0] = "$wc.main"

/$user.main
argv[0] = "$user.main"
```

Example 2:

If the program is started under ppm, *argv[0]* will contain the complete path of the file being executed:

```
/ppm $wc.main
argv[0] = ":VXVE.DJK.MAIN"
```

Example 3:

If the program is started from a program description, *argv[0]* will contain the program description name:

```
/creol
COL/crepd main_pd sp=__start l=(osf$current_library,...
COL../vcf$library)
COL/addm $user.main
COL/disl
COL/genl test_lib
COL/quit
/$user.test_lib.main_pd
argv[0] = "$user.test_lib.main_pd"
```

The output from the DISNL subcommand is shown below:

```
MAIN_PD          - program description - 14:45:13 1992-03-05
MAIN             - object module       - 14:04:32 1992-03-05
```

Example 4:

If the program is started by an execute_task command, unless special care is taken, *argv[0]* will contain the EXECUTE_TASK command:

```
/exet sp=__start f=$user.main p='a b'
argv[0] = "exet"
argv[1] = "a"
argv[2] = "b"

/exet sp=__start f=$user.main p='!$user.main a b'
argv[0] = "$user.main"
argv[1] = "a"
argv[2] = "b"
```

This example demonstrates how to force a value into *argv[0]*. If the parameter string passed to `EXECUTE_TASK` starts with an exclamation mark (!), the value that follows the exclamation point is used for *argv[0]*.

Notes and Cautions

Archived File Support

The following items should be noted in the support of archived files:

- Opening an archived file by calling *open(2)* or *fopen(3)* automatically retrieves the file. The *open(2)* or *fopen(3)* call does not return to the program until the file has been retrieved.
- Passing the path of an archived file to *access(2)* automatically retrieves the file. The *access(2)* call does not return to the program until the file has been retrieved.
- The *stat(2)* call now returns the flag, `IARCHIVED`, in a previously unused portion of the *st_mode* field in the *stat* structure for an archived file. The definition of the `IARCHIVED` flag is found in */usr/include/sys/options.h*.
- The *ls(1)* command now identifies archived files when specifying the `-l` or `-F` options. If the `-l` option is specified and the file is archived, the first character of the mode field contains an uppercase A. If the `-F` option is specified, an ampersand (&) follows the name of the archived file.
- The new version of the *rm(1)* command does not call *access(2)* when removing an archived file because *access(2)* initiated a restore operation. This change means that the user is not prompted for confirmation when removing an archived file in which the user does not have write permission.
- The *tar(1)* and *cpio(1)* commands retrieve archived files before writing them to the archive.

X/Windows **24**

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Feature Descriptions

This chapter contains information about X Windows which is the NOS/VE version of the X Window System¹ Version 11, Release 4, and OSF/Motif 1.1.

The X Window System promotes interaction and migration between NOS/VE and EP/IX systems. By using xterm and a window manager, you interact with several NOS/VE and EP/IX systems simultaneously through different windows on a X terminal. Using multiple windows helps improve productivity, for example, data can be compared and data can be copied from one window to another.

EZview allows the user to transfer files from one system to another simply by dragging an icon. Applications can be started by clicking on an icon or selecting from a menu.

Users can develop X applications on NOS/VE and later migrate them to EP/IX.

The X Window System on NOS/VE consists of two components, the basic package and the enhanced package. The basic package is included with CDCNET TCP/IP at no extra cost. It includes all features needed to interact with an X terminal. The enhanced package, known as X Windows for NOS/VE, is a separately priced product (product number Wxxx-32). The enhanced package provides the programmer with the X11R4 libraries, MOTIF libraries, and the MOTIF user interface language for developing X applications.

1. X Window System is a product of the Massachusetts Institute of Technology. Permission to use, copy, modify, and distribute this software and its documentation for any purpose and without fee is hereby granted, provided that the above copyright notice appear in all copies and that both the copyright notice and this permission notice appear in supporting documentation, and that the name of MIT not be used in advertising or publicity pertaining to distribution of the software without specific, written prior permission. MIT makes no representations about the suitability of the software for any purpose. It is provided 'as is' without expressed or implied warranty. This software is not subject to any license of the American Telephone and Telegraph Company or of the Regents of the University of California.

Basic package

The basic package allows you to interact with X terminals. The components of this product include the following:

BOOTP and TFTP

These components allow you to load and font-serve an X terminal from NOS/VE.

Xterm Terminal Emulation

Xterm allows you to use features of NOS/VE which do not have an X interface. Xterm emulates a VT102 terminal emulator in a window.

Tab Window Manager

The Tab Window Manager allows you to control the size, position, and stacking of windows on your screen.

X11R4 Clients

The X11R4 clients provides an assortment of desktop accessories and graphics utilities. Examples of clients are *xrdb* and *xclock*.

Enhanced package

The enhanced package expands the capabilities of the basic package by adding the following components:

X11R4 LIBRARIES

The X11R4 libraries allow you to develop your own applications.

Motif LIBRARIES

Motif is an industry standard window management system supplied by Open Systems Foundation. The package includes all of the widget libraries and tools.

USER INTERFACE LANGUAGE

The User Interface Language allows you to define objects and their behavior for your X application. These tools greatly simplify and speed the development of X applications.

MOTIF WINDOW MANAGER

The Motif Window Manager allows you to control the size, position, and stacking of windows on your screen and is preferred for Motif-based applications.

EZVIEW

EZview is a desktop manager that allows you to organize one or more computer connections to improve their productivity. EZview includes management features such as the ability to do file transfers between computers by dragging an icon from one window to another.

Notes and Cautions

NCDX_24_80 Window Support

NCDX_24_80 terminal model now supports 43x80 and 43x132 as well as 24x80 and 24x132 window sizes.

Xterm Cursor Positioning

This feature now allows xterm cursor positioning with a mouse. To position the cursor with the mouse, do the following:

1. Hold down the shift key.
2. Move the cursor with the mouse to the desired position.
3. Press the left mouse key.
4. Release the shift key and the left mouse key.

Support Information

A

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Support Information

A

The information in this appendix applies to system software, that is, the operating system and the product set including compilers and data management products.

Critical Support

A critical problem is defined as *frequent or lengthy service interruptions or key applications are not functioning*. A problem is critical only if no known workaround exists.

You must report the problem via a Programming System Report (PSR) and provide justification for the critical status. For a specified period of time after the release of a software product, Control Data provides critical support. This means that Control Data must either provide a correction to the product or a satisfactory workaround for the problem.

Standalone Critical Support

In the standalone environment, critical support is provided for releases of NOS/VE until the dates shown in the following table:

Table A-1. NOS/VE Standalone Critical Support

System Version	Level	Critical Support End Date
1.5.3	765	Apr 1992
1.6.1	780	Dec 1992
1.7.1	803	Dec 1993

Table A-2. NOS Standalone Critical Support

System Version	Level	Critical Support End Date
2.7.2	774	Jun 1992
2.7.3	780	Dec 1992
2.7.4	797	Jun 1993
2.8.1	803	Dec 1993

Dual State Critical Support

In the dual state environment, critical support is provided for releases of NOS/VE and its dual state partner until the dates shown in the following table:

Table A-3. Dual State Critical Support

System Version	Level	Release Partner	Critical Support End Date
1.5.3	765	NOS 2.7.1 727	Apr 1992
1.5.3	765	NOS 2.7.1 739	Apr 1992
1.5.3	765	NOS 2.7.1 750	Apr 1992
1.5.3	765	NOS 2.7.2 774	Jun 1992
1.5.3	765	NOS 2.7.3 780	Dec 1992
1.6.1	780	NOS 2.7.1 750	Dec 1992
1.6.1	780	NOS 2.7.2 774	Dec 1992
1.6.1	780	NOS 2.7.3 780	Dec 1992
1.6.1	780	NOS 2.7.4 797	Jun 1993
1.7.1	803	NOS 2.7.3 780	Dec 1993
1.7.1	803	NOS 2.7.4 797	Dec 1993
1.7.1	803	NOS 2.8.1 803	Dec 1993

Support for CDCNET is available through NAM/VE for standalone or dual state environments. CDCNET is also available through the indicated NOS dual state partner.

Noncritical Support

Urgent, serious, and minor PSRs will continue to be processed in the context of the latest released software system and/or in the next release.

Publications

B

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CDCNET Manuals	B-1
CYBIL Manuals	B-2
FORTRAN Manuals	B-2
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This appendix provides information about the printed publications available at this release to support the operating system and the products released with the operating system. The subset of publications shipped with your release tapes is composed of the publications required for system installation and operation and depend on the products you ordered. Publications not included with your release material are available through Literature and Distribution Services. For ordering information, see Publications Notes later in this appendix.

Publications

CDCNET Manuals

Table B-1. CDCNET Manuals

Publication Name	Publication Number	Latest Publication	Document Level
CDCNET Batch Device User Guide	60463863G	Manual	765
CDCNET Commands	60000414E	Packet	803
CDCNET Configuration Guide	60461550M	Packet	803
CDCNET Hardware Installation and Troubleshooting	60000348B	Manual	739
CDCNET Network Management Station	60000568D	Manual	780
CDCNET Network Operations and Analysis	60461520J	Manual	765
CDCNET Product Descriptions	60460590E	Manual	765
CDCNET TCP/IP Programming Interfaces and Applications	60000214J	Packet	803
CDCNET Terminal Interface	60463850H	Manual	780
Network Transfer Facility User Guide	60000628A	Manual	780

CYBIL Manuals

Table B-2. CYBIL Manuals

Publication Name	Publication Number	Latest Publication	Document Level
CYBIL for NOS/VE File Management	60464114L	Packet	803
CYBIL for NOS/VE Keyed-File and Sort/Merge Interfaces	60464117K	Manual	750
CYBIL for NOS/VE Language Definition	60464113K	Packet	739
CYBIL for NOS/VE Sequential and Byte Addressable Files	60464116E	Manual	700
CYBIL for NOS/VE System Interface	60464115L	Packet	780
CYBIL Language Services	60487300B	Packet	765

FORTRAN Manuals

Table B-3. FORTRAN Manuals

Publication Name	Publication Number	Latest Publication	Document Level
FORTRAN for NOS/VE Keyed-File and Sort/Merge Interfaces	60485917D	Manual	780
FORTRAN for NOS/VE LIB99	60485915E	Manual	765
FORTRAN for NOS/VE Topics for FORTRAN Programmers	60485916B	Manual	644
NOS/VE FORTRAN Version 1 Language Definition Usage	60485913N	Manual	803
NOS/VE FORTRAN Version 2 Language Definition Usage	60487113J	Manual	803

General User Manuals

Table B-4. General User Manuals

Publication Name	Publication Number	Latest Publication	Document Level
Debug for NOS/VE Usage	60488213E	Manual	739
FTAM/VE	60000455A	Manual	739
Introduction to NOS/VE	60464012D	Manual	750
Mail/VE Version 2	60464514G	Manual	803
Math Library for NOS/VE	60486513J	Manual	750
NOS/VE Advanced File Management	60486413P	Packet	803
NOS/VE Build Utility	60487413D	Manual	780
NOS/VE Commands and Functions	60464018N	Packet	803
NOS/VE Diagnostic Messages	60464613R	Packet	803
NOS/VE File Archiving	60463944F	Packet	803
NOS/VE File Editor	60464015H	Manual	739
NOS/VE Object Code Management	60464413L	Manual	780
NOS/VE Online Manual Systems	60488403F	Manual	727
NOS/VE Source Code Management	60464313J	Manual	739
NOS/VE System Usage	60464014P	Packet	803
NOS/VE Terminal Definition	60464016E	Manual	739
Professional Programming Environment for NOS/VE Usage	60486613G	Manual	762
SCL for NOS/VE Advanced File Management Summary	60486419E	Manual	678
SCL for NOS/VE Advanced File Management Tutorial	60486412B	Manual	644
Context Summary	60488419A	Manual	n/a

Information Management Manuals

Table B-5. Information Management Manuals

Publication Name	Publication Number	Latest Publication	Document Level
DM Command Procedures Reference Packet	60487905E	Manual	727
DM Concepts and Facilities Packet	60487900E	Manual	727
DM Error Message Summary for DM on CDC NOS/VE	60487906E	Manual	727
DM Fundamental Query and Manipulation Packet	60487903E	Manual	727
DM Installation User Guide	60487907B	Manual	750
DM Report Writer Reference Packet	60487904E	Manual	727
DM System Administrator's Reference Packet for DM on CDC NOS/VE	60487902E	Manual	727
DM Utilities Reference Packet for DM on CDC NOS/VE	60487901E	Manual	727
IM/Control for NOS/VE Usage	60488913C	Manual	716
IM/Fast for NOS/VE Administration Usage	60487513B	Manual	716
IM/Fast for NOS/VE Programming Usage	60487514B	Manual	716
IM/Quick for NOS/VE Usage	60485713A	Manual	750
IM/Quick for NOS/VE Summary	60485714D	Manual	664
IM/Smart for NOS/VE Usage	60488513C	Manual	765
BASISplus System Administration on NOS/VE	60487819A	Manual	780
BASISplus Utilities on CDC-NOS/VE	60487820A	Manual	780
BASISplus Documentation Guide	60487821C	Manual	780
Upgrading from IM/DM to IM/BASISplus	60487823A	Manual	780
NOS/VE IM/BASISplus Installation and User's Guide	60487023A	Manual	780

(Continued)

Table B-5. Information Management Manuals (Continued)

Publication Name	Publication Number	Latest Publication	Document Level
ORACLE for NOS/VE Installation and User's Guide	60488014C	Manual	750
ORACLE for NOS/VE Installation and User's Guide	60488014D	Manual	750/765
ORACLE for NOS/VE Installation and User's Guide	60488014E	Manual	780
ORACLE for NOS/VE Installation and User's Guide	60488014F	Manual	803
ORACLE Database Administrator's Guide	41621233D	Manual	780
ORACLE Documentation Guide	60488052G	Manual	803

Migration Manuals

Table B-6. Migration Manuals

Publication Name	Publication Number	Latest Publication	Document Level
Migration from IBM to NOS/VE	60489507B	Manual	678
Migration from NOS to NOS/VE	60489503I	Manual	762
Migration from NOS/BE to NOS/VE Standalone	60489506E	Manual	762
Migration from NOS/BE to NOS/VE	60489505G	Packet	762
Migration from VAX/VMS to NOS/VE	60489508F	Manual	739

Screen Management Manuals

Table B-7. Screen Management Manuals

Publication Name	Publication Number	Latest Publication	Document Level
NOS/VE Screen Formatting	60488813G	Packet	765
Screen Design Facility/Screen Formatting	60488613I	Manual	780
Screen Design Facility/Data Management for NOS/VE	60488618C	Manual	780

Miscellaneous Manuals

Table B-8. Miscellaneous Manuals

Publication Name	Publication Number	Latest Publication	Document Level
CML/VE Reference	60000019K	Manual	780
CYBER Initialization Package (CIP) CYBER 180 Model 810, 830, 815, 825; CYBER 810A, 830A Computer Systems Reference Manual	60000417C	Packet	765
CYBER Initialization Package (CIP) CYBER 180 Model 835, 845, 855; CYBER 840, 850, 860 Computer Systems with IOU AB115A Reference Manual	60000418C	Packet	765
CYBER Initialization Package (CIP) CYBER 180 Model 845, 855; CYBER 840, 850, 860 with IOU AT478A/AT481A; CYBER 840A, 850A, 860A, 870A, 990, 990E, 995E Computer Systems Reference Manual	60000419C	Packet	765
CYBER Initialization Package (CIP) CYBER 960, 994 Computer Systems Reference Manual	60000420E	Packet	780
CYBER Initialization Package (CIP) CYBER 962, 992 Computer Systems Reference Manual	60000421E	Packet	780
CYBER Initialization Package (CIP) CYBER 170 Model 865, 875; Non-Model 8XX/9XX Computer Systems Reference Manual	60000422B	Packet	750
CYBER 2000 System Console User Interface CYBER Initialization Package (CIP) Reference Manual	60000539E	Packet	780
Desktop/VE Host Utilities	60463918D	Manual	739
HPA/VE Reference Manual	60461930P	Manual	780
MALET/VE Reference Manual	60461940J	Manual	757
Remote Host Facility Usage	60460620E	Manual	716

(Continued)

Table B-8. Miscellaneous Manuals (Continued)

Publication Name	Publication Number	Latest Publication	Document Level
Xlib Programming Manual for Version 11	60464701A	Manual	716
Xlib Reference Manual for Version 11	60464702A	Manual	716
X Windows for NOS/VE	60000673A	Manual	803

Other Compiler Manuals

Table B-9. Other Compiler Manuals

Publication Name	Publication Number	Latest Publication	Document Level
Ada for NOS/VE Reference Manual	60498118A	Manual	700
Ada for NOS/VE Usage	60498113B	Packet	750
APL for NOS/VE File Utilities	60485814 01	Manual	644
APL for NOS/VE Language Definition	60485813C	Manual	700
BASIC for NOS/VE Summary	60486319B	Manual	664
BASIC for NOS/VE Usage	60486313E	Manual	700
C for NOS/VE Reference Manual	60469830G	Manual	739
NOS/VE C Version 2 Usage and Reference	60469831G	Packet	803
COBOL for NOS/VE Usage	60486013P	Manual	780
Common LISP the Language	60486201A	Manual	716
LISP for NOS/VE Language Definition Usage Supplement	60486213B	Manual	739
Pascal for NOS/VE Summary	60485619B	Manual	739
Pascal for NOS/VE Usage	60485613J	Packet	803
Prolog for NOS/VE Usage	60486713B	Manual	739

Site Manuals

Table B-10. Site Manuals

Publication Name	Publication Number	Latest Publication	Document Level
Cartridge System/VE for 5744	60463928B	Manual	780
Cartridge System/VE for 7992	60463927B	Packet	803
Control Data Software Support	60494500C	Manual	n/a
Control Data Software Support Summary	60494519C	Manual	n/a
CYBER 930 Guide to Operations	60469560B	Packet	750
Diagnostic Virtual System for NOS/VE	60469720M	Packet	780
Mail/VE Version 2 Administration	60464515G	Manual	803
NOS/VE Accounting Analysis System	60463923E	Manual	739
NOS/VE Accounting and Validation Utilities for Dual State	60458910E	Manual	739
NOS/VE File Server for STORNET and ESM-II	60000190F	Packet	803
NOS/VE LCN Configuration and Network Management	60463917D	Manual	739
NOS/VE Network Management	60463916J	Packet	803
NOS/VE Operations	60463914R	Packet	803
NOS/VE Removable Media Management System	60463947C	Packet	803
NOS/VE Security Administration	60463945B	Packet	780
NOS/VE System Performance and Maintenance, Volume 1, Performance	60463915N	Packet	803
NOS/VE System Performance and Maintenance, Volume 2, Maintenance	60463925P	Packet	803
NOS/VE User Validation	60464513K	Manual	780

VX/VE Manuals

Table B-11. VX/VE Manuals

Publication Name	Publication Number	Latest Publication	Document Level
DWB/VX Introduction and User Reference	60469890B	Manual	700
DWB/VX Macro Packages Guide	60469910A	Manual	678
DWB/VX Preprocessors Guide	60469920A	Manual	678
DWB/VX Text Formatters Guide	60469900B	Manual	700
VX/VE Administrator Guide and Reference	60469770H	Manual	739
VX/VE An Introduction for UNIX Users	60469980F	Manual	700
VX/VE Programmer Guide	60469790E	Manual	739
VX/VE Programmer Reference Manual	60469820H	Manual	739
VX/VE User Guide	60469780F	Manual	739
VX/VE User Reference Manual	60469810H	Manual	739

Publications Notes

- For each product ordered, the standard package includes one copy of each manual containing information for that release.
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Microfiche

Microfiche source listings are not available for NOS/VE 1.7.1, L803.

With this release of NOS/VE, the Performance Tuning appendix of the Software Release Bulletin has been moved to an appendix in the NOS/VE System Performance and Maintenance Manual, Volume 1 (60463915).

Updated Products

D

The following products were updated at L803:

AAM
ACCOUNTING_ANALYSIS_SYSTEM
ACCOUNTING_UTILITIES
ADA
AFTERBURNER
APL
APPLICATIONS_INSTALL_TOOLS
ARCHIVE_CSS_PROCESSOR
ARCHIVE_MAG_TAPE_PROCESSOR
ARCHIVE_VE_CLUSTERED_MAINFRAMES

ARCHIVE_VE_NOS_7990
ARCHIVE_VE_QUEUE_MANAGER
ASSEMBLER_VE
AUDIT
BASIC
BISYNC_3270_TIP
BUILD_UTILITY
CARTRIDGE_STORAGE_SYSTEM
CARTRIDGE_SYSTEM_VE_5744
CDCNET

CDCNET_NETCU
CDCNET_NETWORK_VALIDATION
CDCNET_TP0_CONS
CML
COBOL
CV2
CYBIL
CYBILIR
CYBIL_RUNTIME_LIBRARY
DATA_ENCRYPTION

DEBUG
DESKTOP_VE
DRJE
DVS
DX_ACCESS_METHOD
EDIT_CATALOG
ETA_RHFAM
EZVIEW
FILE_MANAGER
FILE_SERVER

FMA
FMU
FORMAT_CYBIL_SOURCE
FORTRAN_RUNTIME_LIBRARY
FORTRAN_V2_RUNTIME_LIBRARY
FORTRAN_VERSION_1
FORTRAN_VERSION_2

FTAM
GRAPHICS_PERFORMANCE_MONITOR
HELP
HIGH_SPEED_HDLC

HPA
IM_CONTROL
IM_FAST
IM_QUICK
IM_SMART
INSTALLATION_TOOLS
KERMIT
LANGUAGE_SERVICES
LIB99
LINE_PRINTER_MANUALS

LISP
MAILVE_VERSION_2
MALET
MATH_LIBRARY
MENU_VE
MODE4_TIP
MONITOR_TOOLS
NETWORK_ARCHIVING
NETWORK_TRANSFER_FACILITY
NETWORK_VALIDATION

NFS
NIS
NLM
NOSVE_FILES
NOSVE_INITIAL_LOAD
NOSVE_MAINTENANCE
NQS
ONLINE_MANUALS
ONLINE_MANUALS_SOURCE
OPTICAL_DISK

PASCAL
PFTF
PPE
PPM
PRE_INSTALL_SW
PROGRAMMING_ENVIRONMENT
PROLOG
PTF_QTF
REMOTE_LINE_MONITOR_VE
REXEC

RHFAM
RMS
SCU
SDF
SERVICE_ACCESS_CONTROL
SNAP
SORT

SVS
TCP_IP_C_HEADER_FILES
TCP_IP_HOST

TCP_IP_TIP
TDU
TERMINAL_PASSTHROUGH
TFTP_VE
X25_TERMINAL_GATEWAY
X29_PAD_SERVER
XMODEM
XTF
X_WINDOWS
X_WINDOWS_PRODUCTION_ENV

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